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Survivorship and Movements of Southwestern Willow Flycatchers at Roosevelt Lake, Arizona - 2003

(Photo by Bob Steele)

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EXECUTIVE SUMMARY

The 2003 USGS demographic banding project was centered at Roosevelt Lake with additional effort at San Pedro River and other areas. We continued to track banded willow flycatchers that were detected, observe high levels of movement, and address questions of management concern. Overall, we captured and banded 54 new adult flycatchers, monitored 201 banded adults, and banded 124 nestlings from 53 nests at Roosevelt Lake. This year, we recorded 53% adult survivorship, and detected high levels of movement from patch to patch, with 38% of 2002 returning birds moving to different locations. By the end of the field season, 88% of all willow flycatchers at Roosevelt Lake were banded, the highest level since the project began in 1996.

In 2003, one of the three nestlings banded in 2002 returned, resulting in a juvenile survivorship of 33%, the highest percent yet. Eleven nestlings banded in 2001 were also detected, raising survivorship estimates from past years.

We spent a considerable amount of time resighting in San Pedro in an effort to detect movements away from Roosevelt Lake. We detected two birds that moved from Roosevelt Lake to San Pedro. In addition we detected two birds that moved from Roosevelt Lake to the Verde River and two that moved from San Pedro to Roosevelt Lake.

Finally, we continued the passive netting project, expanding efforts to include Lake Shore, Shangri-la, and North Shore 1 and 2. Our goal in passive netting was to detect the presence of non-breeding flycatchers (floaters). In total, we captured 39 birds. Most effort was deployed at the Lake Shore patch according to the 2002 protocol. Of 16 individual adult birds captured passively, all were territorial and therefore we did not detect any floaters at Lake Shore this year. However, five individuals captured at other patches were believed to be floaters.

While 2003 was a successful breeding season for the Roosevelt Lake population, the effects of the severe 2002 drought were evident in 2003. The near absence of productivity in 2002 resulted in a subsequent drop in the population, fewer young birds detected in 2003 and a resulting older population than in past years. Contrary to previous years, there appeared to be a general lack of floaters in the population, suggesting that many potential floaters were able to find suitable territories this year due to the decreased population numbers. In fact, the presence of a floater population may have helped to reduce the magnitude of the 2003 population decline.

Survivorship and Movements of Southwestern Willow Flycatchers at Roosevelt Lake, Arizona – 2003

INTRODUCTION

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small, endangered bird that breeds only in riparian habitats scattered throughout portions of the Southwestern states (Marshall 2000, Unitt 1987). The flycatcher has suffered serious declines as riparian habitats have been lost or modified (Marshall and Stoleson 2000, USFWS 1993), and was listed as a federal endangered species in 1995 (USFWS 1995).

Two of the largest southwestern willow flycatcher breeding sites in Arizona are found at the Salt River and Tonto Creek inflows to Roosevelt Lake (Fig. 1). Flycatchers were first noted here in 1993 (Muiznieks et al. 1994), where they breed in patches of dense riparian habitat. These sites include a mosaic of patches, some of which are dominated by tamarisk (*Tamarix ramosissima*), others by native willow (primarily *Salix goodingii*), and some with a mixture of both tamarisk and willow. The Salt River Inflow and Tonto Creek sites face the prospect of inundation and potential destruction of habitat when increased lake levels, made possible by recent modifications to Roosevelt Dam, occur. The lake level has been below the elevation of the historic breeding patches since 1996, but may be raised to a level above the breeding patches some time in the future, dependent on water use, precipitation, and runoff (USFWS 1996).

The U.S. Bureau of Reclamation (Reclamation) consulted with the Fish and Wildlife Service under Section 7 of the Endangered Species Act (ESA) regarding potential impacts to the southwestern willow flycatcher resulting from operation of the modified Roosevelt Dam and reservoir. The resulting Biological Opinion requires that Reclamation fund a comprehensive southwestern willow flycatcher research program that includes collection of demographic data (such as birth/death rates, lifetime reproductive success, immigration/emigration, site fidelity, movement between sites, age-specific reproductive success, and longevity). Such a study requires color banding flycatchers so that individuals can be identified and their movements, survivorship, and reproductive efforts can be tracked.

A major reason to study movements at Roosevelt Lake (and beyond) was to determine where resident flycatchers moved once their breeding habitat was inundated. At the beginning of this project, little was known about site fidelity, dispersal, or movement behavior of willow flycatchers. Therefore, there was no way to predict how individual flycatchers would respond when habitat inundation occurred. The lower San Pedro River was then selected as an area where the same site fidelity, movement, and dispersal behavior could be studied among populations that would not experience inundation. So far, there has not been enough water to inundate the sites where willow flycatchers breed. In 2001, work was ended at the San Pedro River so that USGS could focus its efforts on the rapidly growing population at Roosevelt Lake.

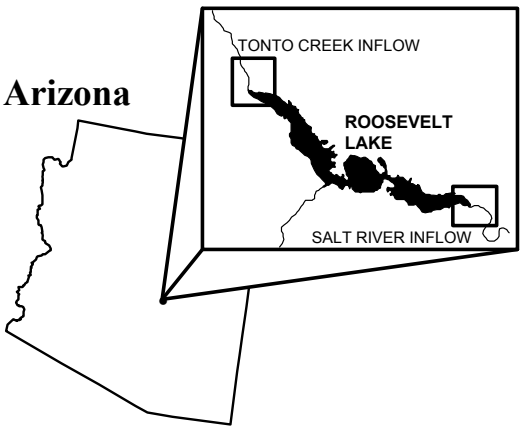

Figure 1: Location of Roosevelt Lake, Gila County, Arizona, and the Salt River and Tonto Creek Inflow sites.

The Roosevelt Lake Biological Opinion was the driving force behind the research presented in this report. Reclamation has funded this USGS-based research program at Roosevelt Lake and the lower San Pedro River since 1996.

STUDY AREA AND BANDING HISTORY

STUDY AREA

Roosevelt Lake is formed by Roosevelt Dam at the confluences of the Salt River and Tonto Creek in central Arizona, approximately 90 km northeast of Phoenix. Willow flycatchers are found at roughly 640 m elevation at the inflows of the Salt River and Tonto Creek, breeding in riparian vegetation found in the flood basins of the river and lakebed. Roosevelt Lake's primary purpose is to hold and retain water for downstream use; therefore the water levels fluctuate significantly with winter runoff spikes and rapid summer time down draws. In 1995, high water levels inundated portions of the historical breeding habitat. Since 1995, the average surface elevation of Roosevelt Lake has continued to drop due to lower than average precipitation in Arizona. This has allowed new habitat to form on the once inundated flood plain. In 1999 willow flycatchers were first detected occupying some of this new habitat, and in years since additional patches of new habitat have become occupied by breeding flycatchers.

The Tonto Creek and Salt River Inflows consist of a matrix of riparian habitat, with areas of occupied patches interspersed with varying aged vegetation (Fig. 2). In past years, most of these patches were considered as separate sites (Luff et al. 2000, Paradzick et al. 2000). However, based on the high degree of observed movement among these patches both between and within years, we now consider the complex of patches at each inflow area as one site. The following sections give a brief history of the patches at the Salt River Inflow and the Tonto Creek Inflow sites:

Salt River Inflow: From 1996 through 1998, all activity at the Salt River Inflow focused on a single location (now called Old Salt). Beginning in 1999, flycatchers were detected at additional sites at lower elevations in the lakebed. These new, young patches form a mosaic of different patch sizes, ages, and habitat composition. Many of these patches had significant numbers of flycatchers present when discovered, and presumably were occupied by flycatchers prior to discovery. There were nine distinct habitat patches occupied by breeding willow flycatchers in 2003 (in order from farthest upstream to farthest downstream):

Old Salt - The original patch within which willow flycatchers were known to breed, discovered in 1993 (Muiznieks et al. 1994). Old Salt consists of a mature monotypic stand of tamarisk.

Mudflats - Flycatchers were first detected here in 1999. This patch (and all the other patches below) was under water in 1995 and has developed since that time. It is now composed mostly of tamarisk, with a small native component.

Shangri-la - Flycatchers were first detected here in 1999. This site is composed of dense willow, cottonwood (*Populus fremontii*), and tamarisk.

School House South 1 - When flycatchers were first detected here in 1999 the patch was primarily composed of dense, mature tamarisk trees. No flycatchers were detected here in 2002 or 2003 and now the patch is composed of primarily dead tamarisk.

School House South 3 - Flycatchers were first detected here in 2000. A patch of mixed riparian habitat.

School House North 1 - Flycatchers were first detected here in 1999. A dense patch of mature tamarisk riparian habitat.

School House North 2- Flycatchers were first detected here in 2000. The patch is a large, dense patch of young tamarisk.

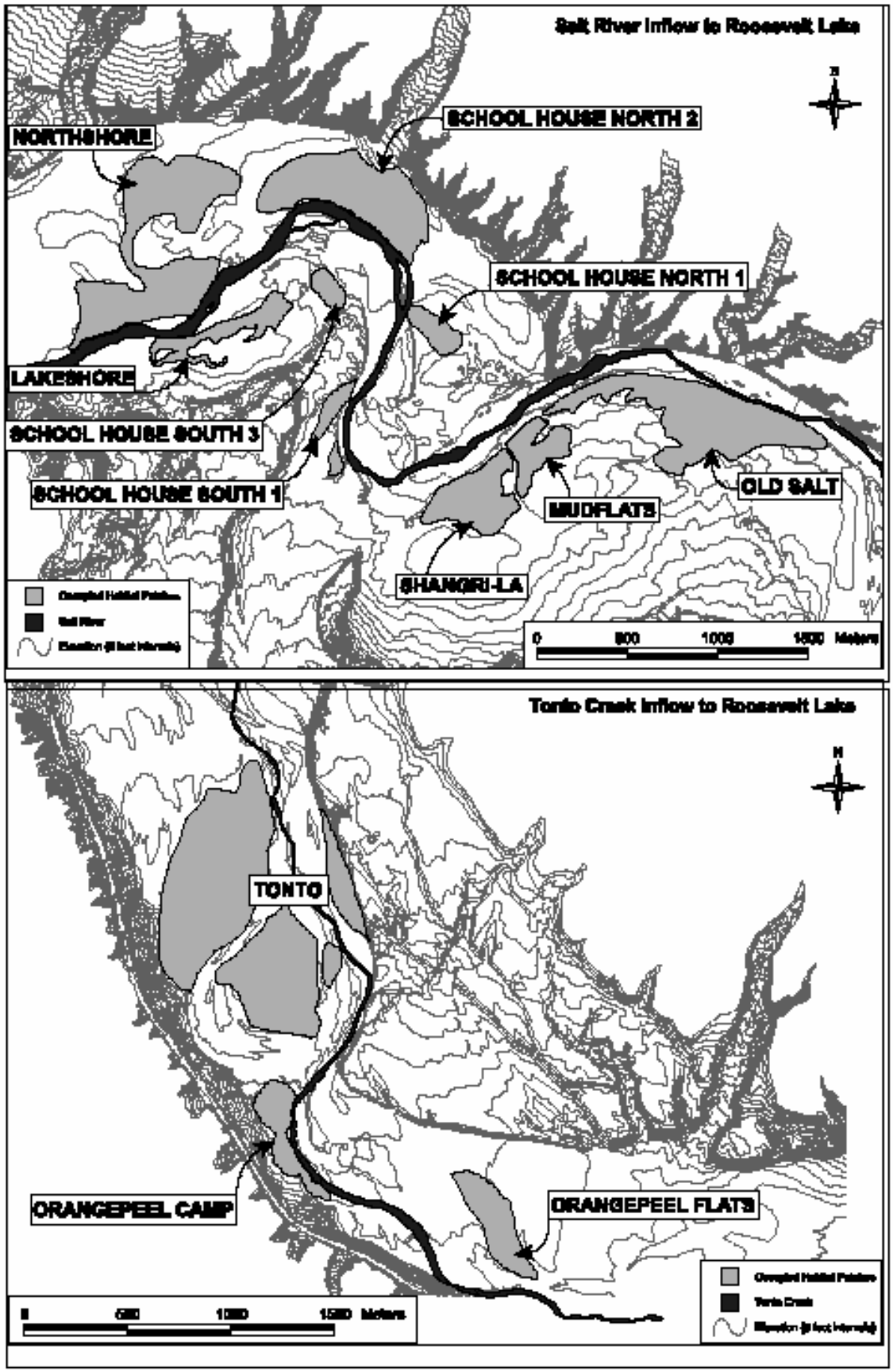

Figure 2: Location and name of willow flycatcher occupied habitat patches at Roosevelt Lake

Lake Shore - Flycatchers were first detected here in 2000. This patch is a nearly monotypic stand of willow.

North Shore 1 and 2 - 2001 was the first year of confirmed breeding at this patch, although flycatchers were heard singing from this patch in 2000. A large area composed of a matrix of willow and tamarisk habitat.

Tonto Creek Inflow: Until 2000, all documented flycatcher breeding activity was at the Tonto habitat patch. As with the Salt River Inflow site, habitat in the dry lakebed began to be occupied by flycatchers in 2000. There were four distinct habitat patches occupied by breeding willow flycatchers in 2003 and one historic patch (in order from farthest upstream to farthest downstream):

Bar X - **(not shown in Fig. 2)** Flycatchers were first detected breeding here in 2003. It is a small, narrow stand of mature willows and cottonwoods 7.3 km upstream of the Tonto patch.

A-cross Road - **(not shown in Fig. 2)** This small, isolated patch is 2.5 km upstream of the historic Tonto patch. Flycatchers were first detected here in 2000. This patch consists of very young, thin, tamarisk, mixed with mature cottonwoods and an under story of short mesquite (*Prosopis spp.*). Flycatchers were not detected here in 2003.

Tonto - Tonto is the longest occupied patch of the Tonto Creek Inflow site, having been discovered in 1993 **(**Muiznieks et al. 1994). The vegetation in this patch was established after the 1978-1980 floods. Tonto patch is comprised of tall tamarisk stands with willow and cottonwood emergents in most locations.

Orange Peel Campground - Flycatcher*s* were first confirmed breeding here in 2000, although there were flycatchers singing from the patch in 1999. This site consists of willow interspersed with tamarisk and mesquite and little under story structure.

Orange Peel Flats - Flycatchers were first detected here in 2000. This patch is composed of primarily dense tamarisk.

BACKGROUND ON THE BANDING PROJECT AT ROOSEVELT LAKE

In 1996, the USGS Colorado Plateau Field Station (CPFS) and the Arizona Game and Fish Department (AGFD) began a long term and large-scale demographic study of willow flycatchers in Arizona. AGFD continued its ongoing surveying and monitoring of new and known flycatcher breeding sites, while USGS joined the efforts by color banding the flycatchers at most of the AGFD monitored sites, as well as several other sites. From 1996 to 2003, 821 adults and 549 nestling/fledgling willow flycatchers were captured and banded across Arizona. A listing of all flycatchers banded at Roosevelt Lake since 1996 is presented in Appendix 1. An additional population genetics component of this study took place during 1996 and 1997 (Busch et al. 2000, Paxton 2000, Sogge et al. 1998).

Thus far, 8 years of data collection (1996-2003) have been funded and conducted. The work conducted from 1996-2002 provides the foundation for this year's site and patch fidelity, movement, and survivorship data (Paxton and Sogge 1996, Paxton et al. 1997, Netter et al. 1998, English et al. 1999, Luff et al. 2000, Kenwood and Paxton 2001, and Koronkiewicz et al. 2002). This report summarizes results of the eighth year of fieldwork.

PROJECT OBJECTIVES

The major goal of this project is to color band and resight southwestern willow flycatchers at all locations within the Roosevelt Lake area. Monitoring these color banded birds is the only effective way to determine between-year survivorship and mortality of adults and young, immigration and emigration, site and patch fidelity, and movement between sites. Furthermore, the presence of banded birds at a site contributes to on-going flycatcher studies by the Arizona Game and Fish Department (AGFD) by providing a more accurate assessment of the number of breeding birds, and the ability to document breeding activities (e.g., pairing, nesting attempts, reproductive success) of individuals within and between years.

Specific objectives of the USGS-based demography study are to:

(1) Collect data on between-year survivorship and mortality of adults and young, immigration, emigration, site and patch fidelity, and movement between sites;

(2) Assist AGFD in banding female flycatchers for their seasonal fecundity study;

(3) Determine, along with AGFD, the number of flycatchers present at Roosevelt Lake; and

(4) Genetically determine the sex of all southwestern willow flycatchers that cannot be sexed in the field.

METHODS

BANDING ADULTS

All adult willow flycatchers were captured using mist nets (see Ralph et al. 1993). Mist nets were typically set up in a known breeding territory and recordings of willow flycatcher vocalizations (both songs and calls) were broadcast from a compact disk player to attract territorial flycatchers (per Sogge et al. 2001).

Prior to 1998, all flycatchers were banded with a uniquely numbered federal aluminum bird band and a unique combination of two plastic color bands. However, as birds were resighted in subsequent years, it became apparent that plastic bands could cause injuries to the legs of some flycatchers. Therefore in 1998, we created color bands by anodizing aluminum bands and then adhering automobile detailing tape to an aluminum band and sealing the entire band with epoxy (making sure that no epoxy could come in contact with flycatchers' legs). Thus, from 1998 to 2003 each captured adult was banded with a unique combination of a numbered federal anodized colored bird band on one leg, and an aluminum color band (either striped or solid) on the other leg. We attempted to recapture most adults that had been previously banded with plastic bands; all plastic bands on recaptured adults were removed and replaced with a unique metal band combination. These techniques allowed each individual to be identified if seen again in the field without need for recapture (see Resighting section below).

In addition to banding, each adult was measured for wing chord, tail length, weight, and fat level in a standardized method (Pyle 1997). When possible, the gender of adult flycatchers was determined by the presence of a cloacal protuberance (male) or brood patch (female). All flycatchers also had a DNA sample taken for gender determination via genetic methods (see Genetics section below).

RESIGHTING

Resighting consists of using binoculars to determine the identity of a color banded flycatcher by observing, from a distance, the unique color band combination on its legs. Resighting allows researchers to detect and monitor individual flycatchers without the need to recapture them. Typically, territories and nests were the focal areas for resighting in order to determine which individuals belonged to specific territories. This information could then be used to document movement, individual productivity, and gender-based behavioral patterns. Furthermore, resighting is the most reliable method for establishing which particular territory a flycatcher belongs to, as techniques used to capture adults (such as playbacks of flycatcher vocalizations) can lure in adults from neighboring territories.

Banders typically spent the early part of each morning target or passive netting, and then redirected their efforts to resighting as daylight increased and birds became more difficult to catch. All banders and AGFD field crews recorded their observations of color banded flycatchers. For every resighted flycatcher, we recorded the color band combination, site, patch, specific location at the patch (using a designated territory number or GPS coordinate), the level of confidence in the resight, and any behavioral observations. Because resighting is difficult, and misidentification of color combinations is a possibility, all resight data in this report are based on at least three or more resights of each color banded individual in the same area.

SURVIVORSHIP ESTIMATES

Using the encounter history (whether a flycatcher was present in a given year) of banded adults through resights and recaptures, we can calculate a return rate from year to year. The return rate can be considered the minimum survivorship, as not every banded flycatcher is detected in each year. Thus, the return rate increases in successive years, as flycatchers not detected in one year are detected in following years. Therefore, mortality calculations based on return rates are composed of the true mortality plus some percentage of undetected flycatchers. To correct for this problem of detection probability, several software packages are available that can calculate survivorship estimates, which estimate the detection probability to better estimate true survivorship. We used the program MARK (White and Burnham 1999) to derive the maximum-likelihood estimate of survivorship in the Roosevelt Lake population.

NESTLING BANDING

Nestlings were banded at 7-10 days of age (determined using USGS nestling aging guide; Paxton and Owen 2002) and only when they could be taken from nests that were safely accessible. Unfortunately, most nests are not accessible without risk of damaging the nest or nest plant, and accessible nests sometimes fail (e.g., from predation) before the young can be banded. Thus, only a small proportion of nestlings are typically banded in any year. Nestlings were banded with a violet-anodized federal bird band in 2003, and a drop of blood was taken for genetic gender determination.

PASSIVE NETTING

Passive netting is the process of placing one or more mist nets in an area and waiting for birds to fly into them (without the use of playback, decoys, or other lures). In 2001, USGS conducted a passive netting pilot project to evaluate the effectiveness of this technique for detecting non-breeding flycatchers (floaters) that may be present at the sites, but are not detected with conventional survey techniques (i.e. territorial response to tape-playback). Our interest in exploring the number of floaters present at the breeding sites was the result of occasionally capturing flycatchers that could not be assigned to a nearby territory, and were never seen again in that year.

Additional objectives of passive netting were to catch 1) individuals that might be using areas outside their noted territory, 2) flycatchers (banded and unbanded) not previously detected in the patch, and 3) flycatchers that were not responsive when using the target netting method described above.

In 2002, we expanded our effort and conducted intensive passive netting at the Lake Shore patch four times in a two week period (three times within the breeding habitat and one in non-breeding habitat) throughout the breeding season (May to July). At least six, 12-meter nets were employed per netting day, typically from 0530-1100 per bander. Nets were checked for birds every 20 minutes or less and any flycatchers caught were processed according to the methods stated in the banding section of this report. Non-willow flycatcher species were immediately released upon extraction from a mist net. In 2003, the same protocol was applied at the Lake Shore patch with additional effort at Shangri-la, and North Shore 1 and 2.

GENETIC GENDER DETERMINATION

A genetic sample was taken from all newly captured flycatchers while being handled for banding. DNA was obtained from a small drop of blood taken (non-lethally) from willow flycatchers by clipping off the tip of one toenail, just past the vascularized tissue. This technique works well for obtaining small amounts of blood from flycatchers and other small passerines, with no discernable negative effects (Super and van Riper 1995, Bush et al. 2000). The drop of blood was stored in a small vial with 1xSSC-EDTA buffer. Samples were placed on ice in the field, and then frozen in the lab until the DNA was extracted. Gender was determined as described in Paxton et al. (2002). Gender determination makes it possible to look for gender-based differences in factors such as dispersal, site fidelity, and survivorship.

DETERMINING AGE BY MOLT PATTERNS

Pyle (1998) proposed that second year willow flycatchers can exhibit patterns of retained flight feathers (primaries and secondaries) that are not observed in older adults. While handling flycatchers during banding, each wing was inspected for retained feathers, indicated by wear and lighter color (especially on the feather spines) when compared with adjacent flight feathers. We began to evaluate this as a possible technique for aging flycatchers in 1998, when the idea was first proposed. After several years of evaluating returning adults and banded, second year returning nestlings, we are confident that retained feathers indicate a second year southwestern willow flycatcher. However, not all second year birds exhibited this pattern, so absence of retained feathers does not preclude the individual from being a second year bird. Thus, all flycatchers with retained feathers are now being aged as second year adults (SY), and those without the retained feathers are considered second year or older (AHY).

RESULTS

SUMMARY OF 2003 BANDING AND RESIGHTING EFFORTS

In 2003, the USGS field crew banded 54 new adult flycatchers, four fledglings, 120 nestlings from 53 nests, and recaptured 11 returning nestlings at Roosevelt Lake (Table 1). Overall, 88% of the total number of adult flycatchers detected at the study patches were banded by the end of the breeding season (Table 1).

The USGS crew spent considerable time resighting and recapturing banded birds, and with the help of AGFD detected a total of 147 adult flycatchers banded in previous years. Therefore, we detected 201 banded flycatchers at Roosevelt Lake in 2003 (Table 1). The total number of adults detected at Roosevelt Lake, including unbanded birds, was 229 (Table 1).

The numbers of flycatchers reported herein for each patch may differ slightly from those reported by AGFD. The differences between numbers are due to different approaches in determining the exact number of individual flycatchers. Our estimates are based on the number of banded and unbanded birds detected, taking into account birds that move from patch to patch, are polygamous, and are captured but are never detected again. Our estimates are best interpreted as the minimum number of individual adults present at Roosevelt in 2003.

Table 1: Summary of willow flycatchers banded during the 2003 breeding season at Roosevelt Lake. Data presented for each habitat patch are number of new adult captures (number of unbanded flycatchers banded in 2003), returning nestlings (flycatchers that were banded as nestlings in previous years, and first detected in 2003), total number of banded adults, total number of adults detected (banded and unbanded), number of nestlings banded from number of nests, and percent of all adult flycatchers detected that were banded by the end of the season.

Patch	# New Adult Captures	# Returning Nestlings Banded	Total # Banded Adults	Total # Adult Birds Detected	# Nestlings Banded (# Nests)	% of All Adults Banded
Old Salt	3	0	11	12	2(1)	92
Mudflats	1	0	6	6	0	100
Shangri-la	9	0	45	55	39(16)	82
School House South 3	6	0	13	14	3(3)	93
School House North 1	1	1	9	11	5(2)	82
School House North 2	5	3	18	21	7(3)	86
Lake Shore	3	1	16	16	6(2)	100
North Shore 1	21	5	62	63	48(20)	98
North Shore 2	2	1	4	5	1(1)	80
Bar X	1	0	2	2	0	100
Tonto Creek Inflow	0	0	5	9	3(1)	56
Orange Peel Campground	2	0	11	15	4(2)	73
Orange Peel Flats	0	0	8	9	6(2)	89
Totals	**54**	**11**	**201***	**229***	**124(53)****	**88**

* total is less than the sum because 9 flycatchers were detected in more than one site
** includes four fledglings from unknown nests

SITE-BY-SITE BANDING RESULTS AT ROOSEVELT LAKE

Salt River Inflow

In 2003, the USGS and AGFD field crews detected 195 willow flycatchers (176 banded and 19 unbanded) from 115 territories along the Salt River Inflow. These 115 territories consisted of 51 monogamous pairs, 26 polygamous males, and 23 unpaired males. We also detected five floaters that were observed in the largest two sites; North Shore 1 and Shangri-la.

At the Salt River Inflow, the USGS banding crew captured 51 new adult flycatchers, recaptured 49, and with help from AGFD resighted the 75 other returning flycatchers (Table 2). There were 21 instances (10%) where a banded bird was detected in a patch but did not have a territory assigned. The majority of these birds were not assigned territories because they were caught at the end of the season at a different patch than where they held a territory, or were floaters. We could not determine the band combinations of two flycatchers (1.5%) known to be banded at the Salt River Inflow.

North Shore 1 had the highest percentage of birds (26.5%) followed by Shangri-la (23%), School House North 2 (8.3%), Lake Shore (6.5%) and Orange Peel Campground (6.5%).

Table 2: Banded willow flycatchers detected at the Salt River Inflow in 2003. Data presented for each habitat patch are date first banded, federal bird band number, color band combination, age in 2003, sex, territory occupied in 2003, whether the bird was a confirmed resident of a territory, and capture status (new capture, recapture or resight).

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
Old Salt	7/19/1999	1710-20298	YKY	VV	5Y	M	50/56[1]	Yes	Resight
	5/17/2001	1710-20498	ZZ	WV	ATY	F*	27	Yes	Resight
	7/26/2002	1740-51720	XX	OD	ASY	M	5[3]	Yes	Resight
	7/17/2002	1740-51730	KO	XX	ASY	M	22	Yes	Resight
	6/18/2002	1740-51774	XX	OZ	ASY	F	50	Yes	Resight
	7/19/2000	1740-91596	OD	KK	4Y	M	27	Yes	Resight
	6/15/2000	1740-91966	KK	KD	A4Y	M	8	Yes	Resight
	6/18/2000	1740-91969	DW	KK	A4Y	F	8	Yes	Resight
	6/16/2003	2290-24237	KW	GG	AHY	F	56	Yes	New
	6/25/2003	2290-24262	GG	RD	AHY	M*	2	Yes	New
	6/1/2003	2290-24280	GG	KV	AHY	F	2	Yes	New
Mudflats	6/29/2001	1490-89921	OG	ZZ	4Y	M	42/44[1]	Yes	Resight
	7/1/1998	1590-97524	YW	VV	A6Y	F	41	Yes	Resight
	6/3/2001	1710-20220	VV	ZZ	ATY	F*	42	Yes	Resight
	5/22/2001	1710-20240	KG	ZZ	ATY	F	44	Yes	Resight
	5/29/2002	1740-51797	XX	OK	ASY	M*	41/43[1]	Yes	Recapture
	6/1/2003	2290-24213	GG	GRG	SY	F	43	Yes	New
Shangri-la	7/1/2001	1490-89803	VV	WDW	ATY	F*	52	Yes	Resight
	7/2/2001	1490-89805	VV	DWD	4Y	F*	9	Yes	Recapture
	6/28/2001	1490-89816	WK	VV	4Y	F*	55	Yes	Resight
	6/2/1997	1590-97318	XX	WW/PD	A7Y	F	29	Yes	Resight
	6/30/1998	1590-97540	VV	RY	A6Y	F	15	Yes	Resight
	6/22/1999	1590-97543	VV	WG	A5Y	M*	11/18[1]	Yes	Recapture
	6/22/1999	1590-97544	VV	RD	A5Y	M	16	Yes	Resight
	5/22/2001	1710-20203	ZZ	RO	ATY	M*	1/59[1]	Yes	Resight
	6/3/2001	1710-20241	KY	ZZ	ATY	F*	59	Yes	Recapture
	6/5/2001	1710-20243	OD	ZZ	ATY	F*	0	Yes	Resight
	6/3/2001	1710-20264	OO	VV	ATY	F	24	Yes	Resight
	6/23/1999	1710-20280	VV	KD	A5Y	M	10/29/89[1]	Yes	Recapture
	6/23/1999	1710-20282	VV	YO	A5Y	F	40	Yes	Resight
	7/24/1999	1710-20305	VV	DO	A5Y	M	3	Yes	Resight
	7/26/1999	1710-20308	WO	VV	A5Y	F	16	Yes	Resight
	6/27/1999	1710-20347	VV	YD	A5Y	M	15	Yes	Resight
	5/30/2001	1710-20456	WRW	ZZ	ATY	F*	89	Yes	Resight
	6/1/2001	1710-20461	VYV	ZZ	ATY	M	4/69[1]	Yes	Resight
	7/16/1998	1710-20473	KW	ZZ	A6Y	M*	19/52[1]	Yes	Resight
	5/4/2001	1710-20497	ZZ	YW	ATY	M*	40/51[1]	Yes	Resight
	5/17/2000	1710-20595	KK	DK	A4Y	M	23	Yes	Recapture

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
	6/19/2000	1710-20616	KK	YY	A4Y	M*	0	Yes	Resight
Shangri-la	6/13/2000	1710-46327	KK	DY	5Y	M	25	Yes	Resight
	6/18/2002	1740-51715	WV	XX	TY	F*	69	Yes	Resight
	7/26/2002	1740-51720	XX	OD	ASY	M	17[3]	No	Recapture
	6/16/2002	1740-51745	DK	XX	ASY	F*	51	Yes	Resight
	6/11/2002	1740-51758	DWD	XX	ASY	F*	19	Yes	Resight
	5/18/2002	1740-51818	XX	YK	ASY	M*	21/26[1]	Yes	Recapture
	7/3/2001	1740-51889	VWV	KK	4Y	M*	35	Yes	Resight
	7/12/2000	1740-91591	VW	KK	5Y	M	17/55[1]	Yes	Recapture
	6/25/1998	1740-91866	DD	KK	A6Y	M*	23	Yes	Resight
	6/19/2000	1740-91973	WW	KK	A4Y	M	20	Yes	Resight
	7/29/2001	2210-57041	KK	WDW	ATY	M*	24	Yes	Resight
	7/25/2003	2280-96653	GG	WVW	SY	F	16	No	New
	6/12/2003	2290-24234	GG	RY	AHY	M	28	Yes	New
	6/12/2003	2290-24235	GWG	GG	AHY	F	28	Yes	New
	6/15/2003	2290-24236	GG	DYD	AHY	F	20[2,3]	Yes	New
	6/27/2003	2290-24242	DW	GG	ASY	F*	1	Yes	New
	5/31/2003	2290-24251	GG	DW	AHY	F	21	Yes	Resight
	6/1/2003	2290-24252	KYK	GG	AHY	F*	4	Yes	New
	7/22/2003	2290-24255	KY	GG	AHY	M	18	No	New
	7/22/2003	2290-24256	GK	GG	SY	M	18	No	New
	6/5/1997	2290-24257	GG	OW	A7Y	F	18	Yes	Recapture
	5/30/2003	2290-24279	GG	RW	AHY	F	17	Yes	New
	6/27/2003	2290-24287	GG	KD	AHY	F*	16[3]	No	Recapture
School House South 3	5/17/2001	1710-20219	DO	ZZ	ATY	M*	73[3]	Yes	Recapture
	5/5/2001	1710-20239	ZZ	GO	ATY	M*	90/80[1]	Yes	Resight
	5/18/2001	1710-20500	WG	ZZ	ATY	F*	90	Yes	Resight
	7/16/2002	2210-57313	DYD	DD	ASY	M*	12	Yes	Recapture
	6/21/2000	2290-24202	GG	KY	4Y	M*	0/1[1,3]	Yes	Resight
	5/20/2003	2290-24211	GG	RWR	SY	F	90	No	New
	5/30/2003	2290-24223	WW	GG	AHY	F	31	Yes	New
	6/4/2003	2290-24241	DR	GG	SY	F	30	Yes	New
	6/2/2003	2290-24281	GG	DWD	AHY	F	73/80[2]	Yes	New
	6/3/2003	2290-24282	GG	RDR	AHY	F	1[2,3]	No	New
	6/2/2002	2290-24301	DD	WZW	ASY	M*	30	Yes	Recapture
	6/25/2001	2290-24304	KGK	DD	TY	M*	31[3]	Yes	Recapture
	5/31/2003	2290-24305	KWK	DD	AHY	M*	95	Yes	New
School House North 1	6/16/2001	1710-20245	OKO	ZZ	TY	M	65/16[1]	Yes	Recapture
	6/22/1999	1710-20275	VV	OO	A5Y	M	16	Yes	Resight
	6/24/2000	1710-20325	DYD	VV	4Y	F	21	Yes	Resight
	6/2/2001	1710-20462	DY	ZZ	ATY	M*	65/92[1]	Yes	Resight
	7/29/1999	1710-20567	YO	VV	A5Y	M	21	Yes	Resight
	6/19/2000	1740-91974	GK	KK	A4Y	F	26	Yes	Resight

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
	7/29/2002	2210-57309	VWV	XX	TY	M	84	Yes	Recapture
School House North 1	6/3/2003	2290-24282	GG	RDR	AHY	F	84[2,3]	Yes	Resight
	6/6/2000	2290-24314	DD	DWD	A4Y	M	26[3]	Yes	New
School House North 2	6/20/2001	1490-89954	YKY	ZZ	TY	M	50	Yes	Recapture
	6/25/2001	1710-20225	KYK	ZZ	TY	M*	83	Yes	Recapture
	6/25/2001	1710-20233	DD	ZZ	TY	F	53	Yes	Recapture
	7/9/1999	1710-20385	YRY	DD	5Y	M	52/78[1]	Yes	Resight
	5/31/2002	1740-51731	XX	GR	ASY	F	50	Yes	Resight
	6/30/2002	1740-51748	XX	KG	ASY	F	78	Yes	Resight
	5/22/2002	1740-51796	XX	KW	ASY	M*	78	Yes	Resight
	6/16/2000	1740-91967	KK	GK	A4Y	F*	51	Yes	Resight
	7/1/2001	2210-57032	DRD	KK	TY	M	88	Yes	Recapture
	7/12/2001	2210-57052	DK	KK	TY	F	52	Yes	Recapture
	7/22/2002	2210-57306	KGK	XX	ASY	M	51	Yes	Resight
	6/26/2003	2280-96652	GG	YKY	AHY	F*	53	Yes	New
	5/6/2003	2290-24221	GG	OO	AHY	M*	83[3]	Yes	Resight
	6/26/2003	2290-24240	GG	DR	AHY	F*	83	Yes	New
	5/15/2003	2290-24267	GG	DRD	AHY	M	82	Yes	New
	5/28/2003	2290-24270	GG	OKO	AHY	M	53	Yes	New
	6/13/2003	2290-24285	GG	WDW	AHY	F	88	Yes	New
	6/25/2001	2290-24304	KGK	DD	TY	M*	13[3]	Yes	Resight
Lake Shore	6/6/1999	1710-20263	GW	VV	A5Y	F	27	Yes	Resight
	7/24/2001	1710-20317	OD	VV	4Y	M*	5/27[1]	Yes	Resight
	6/18/1999	1710-20339	VV	OG	6Y	M	2	Yes	Resight
	6/19/2000	1710-20698	YY	KK	A4Y	F	94	Yes	Recapture
	6/13/2000	1710-46330	YD	KK	5Y	F	2	Yes	Resight
	6/12/2002	1740-51714	XX	WO	ASY	F	5	Yes	Recapture
	7/1/2000	1740-91975	KK	OY	A4Y	M	12/94[1]	Yes	Recapture
	7/27/2001	2210-57059	KV	KK	TY	F	3/6[2]	Yes	Recapture
	6/14/2001	2210-57307	DD	OKO	ATY	M*	N/A[3]	No	Recapture
	7/17/2002	2210-57326	XX	ZO	TY	F*	12	Yes	Recapture
	5/6/2003	2290-24221	GG	OO	AHY	M*	N/A[3]	No	New
	7/11/2003	2290-24225	KD	GG	AHY	M	94	No	New
	6/12/2003	2290-24254	GG	VYV	AHY	F*	35	Yes	New
	7/7/1999	2290-24306	RGR	DD	5Y	M	3/35[1]	Yes	Recapture
	5/18/2002	2290-24307	DD	WGW	ASY	M*	6	Yes	Recapture
	6/11/2002	2290-24309	DD	VWV	TY	M*	2[3]	Yes	Recapture
North Shore 1	7/14/2001	1490-89802	VV	WRW	ATY	F*	89	Yes	Resight
	6/2/2003	1490-89860	VV	DRD	AHY	F	4	Yes	New
	6/27/2001	1490-89913	ZZ	KGK	4Y	M*	89/42[1]	Yes	Resight
	6/26/2001	1490-89934	ZZ	KYK	4Y	F*	33	Yes	Resight
	6/20/2001	1490-89950	ZZ	OK	TY	F	36	Yes	Recapture

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
	6/18/2001	1490-89962	RZ	ZZ	TY	M	36/76[1]	Yes	Resight
North Shore 1	6/25/2001	1710-20226	ZZ	RK	TY	M	54	Yes	Recapture
	6/23/1999	1710-20281	VV	GG	A5Y	M	19	Yes	Resight
	6/30/1999	1710-20288	VV	RYR	5Y	M	18	Yes	Resight
	6/30/2000	1710-20604	KK	KV	A4Y	M	37	Yes	Resight
	6/19/2000	1710-20699	KK	WR	A4Y	M	33	Yes	Resight
	6/13/2000	1710-46325	WG	KK	A4Y	F	41	Yes	Recapture
	6/27/2002	1740-51716	XX	RKR	ASY	F	35	Yes	Recapture
	7/25/2002	1740-51722	YY	XX	TY	M	35	Yes	Recapture
	7/11/2002	1740-51750	KRK	XX	ASY	F	18	Yes	Resight
	6/28/2002	1740-51753	XX	RZ	ASY	F*	76	Yes	Resight
	7/16/2002	1740-51754	XX	YKY	ASY	F*	3	Yes	Recapture
	7/14/2002	1740-51756	XX	WG	ASY	M	74	Yes	Resight
	6/5/2002	1740-51778	YD	XX	ASY	U	98	Yes	Resight
	7/15/2002	1740-51781	XX	YR	ASY	F	2	Yes	Resight
	5/29/2002	1740-51785	XX	WK	ASY	M	1	Yes	Resight
	6/16/2002	1740-51791	GRG	XX	ASY	M*	39	Yes	Resight
	7/27/2002	1740-51804	ZKZ	XX	TY	F	24	Yes	Resight
	7/27/2002	1740-51805	GKG	XX	ASY	F*	19	Yes	Resight
	7/6/2000	1740-51857	RY	KK	4Y	F	91	Yes	Recapture
	7/17/2001	1740-51870	DYD	KK	TY	M	98	Yes	Recapture
	6/2/1996	1740-91506	RW	XX	A8Y	M	14	Yes	Resight
	6/19/2000	1740-91970	KK	KOK	A4Y	M	17/38[1]	Yes	Recapture
	7/21/2000	2210-57002	KK	OK	4Y	M	31	Yes	Resight
	7/31/2000	2210-57014	KK	DD	4Y	F	37	Yes	Recapture
	7/1/2001	2210-57034	OKO	KK	TY	F*	39	Yes	Recapture
	7/12/2001	2210-57053	KK	KYK	TY	M	2/3[1]	Yes	Resight
	7/15/2000	2210-57075	OG	KK	4Y	F	96	Yes	Resight
	6/27/2001	2210-57093	DY	KK	TY	M	4/72[1]	Yes	Recapture
	7/15/2002	2210-57301	XX	KWK	ASY	F	47	Yes	Resight
	7/21/2002	2210-57304	XX	YRY	ASY	M	1	Yes	Recapture
	6/14/2001	2210-57307	DD	OKO	ATY	M*	24[3]	Yes	Resight
	5/17/2003	2210-57323	GG	WG	AHY	M	69	No	New
	8/9/2002	2280-96761	ZO	XX	ASY	M*	96	Yes	Resight
	6/20/2000	2290-24202	GG	KY	4Y	M	91[3]	No	Recapture
	5/29/2003	2290-24212	KOK	GG	SY	F	31	Yes	New
	6/13/2003	2290-24214	DO	GG	SY	M	41	Yes	New
	6/30/2003	2290-24215	OO	GG	AHY	F*	74	Yes	New
	7/15/2003	2290-24216	GG	VK	AHY	F	90	No	New
	5/26/2003	2290-24222	DK	GG	SY	F	25	Yes	New
	7/9/2003	2290-24224	GG	VWV	AHY	M	33	No	New

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
	7/23/2003	2290-24226	KWK	GG	AHY	M	36	No	New
North Shore 1	6/10/2003	2290-24231	GG	KW	AHY	F*	42	Yes	New
	6/11/2003	2290-24232	YW	GG	AHY	F*	34	Yes	New
	6/11/2003	2290-24233	RD	GG	SY	F	17/91[2]	Yes/No	New
	6/25/2003	2290-24238	DY	GG	AHY	F*	38	Yes	New
	6/25/2003	2290-24239	GG	RGR	SY	M*	34	Yes	New
	6/2/2003	2290-24272	GG	KR	AHY	F	72	Yes	New
	7/27/2003	2290-24283	GG	YK	AHY	M	10	No	New
	6/27/2003	2290-24287	GG	KD	AHY	F*	47[3]	Yes	New
	7/15/2003	2290-24288	GG	KRK	AHY	F*	54	Yes	New
	6/19/2000	2290-24302	DD	WRW	A4Y	M	25	Yes	Recapture
	5/28/2003	2290-24303	YKY	DD	AHY	M*	31	No	New
	6/11/2002	2290-24309	DD	VWV	TY	M	12[3]	Yes	Resight
	6/25/2003	2290-24311	DD	YDY	AHY	M*	48	No	New
	7/1/2000	2290-24312	RKR	DD	4Y	M*	22/91[1]	Yes	Recapture
	6/25/2003	2290-24313	DD	YKY	AHY	M*	8[3]	No	New
North Shore 2	8/15/2002	1490-89793	VV	YDY	SY	F	7	Yes	Recapture
	7/22/2002	2210-57305	XX	ZKZ	ASY	M	7	Yes	Recapture
	6/11/2003	2290-24253	KY	GG	AHY	F	0	Yes	New
	6/15/2003	2290-24261	GG	KG	AHY	M	5	No	New

Color band color codes: X=silver, **V**=violet, **Z**=gold, **K**=black, **D**=blue, **G**=green, **O**=orange, **R**=red, **W**=white, **Y**=yellow, and **P**=pink
Age: SY=2 years, **AHY**=2 years or older, **TY**=3 years, **ASY**=3 years or older, **4Y**=4 years, **ATY**=4 years or older, **5Y**=5 years old, **A4Y**=5 years or older, **A4Y**=5 years or older, **6Y**=6 years, **A5Y**=6 years or older, **7Y**= 7 years, **A6Y**=7 years or older, **8Y**=8 years, **A7Y**=8 years or older, **A8Y**=9 years or older
Sex: F=female, **M**=male, **U**=unknown
[1] Polygamous male
[2] Mate Switching
[3] Exhibited within season movement between patches
* Birds sexed in the field

Tonto Creek Inflow

In 2003, USGS and AGFD detected 35 willow flycatchers (26 banded and 9 unbanded) from 20 territories along the Tonto Creek Inflow (Table 3). This included nine monogamous pairs, four polygamous males and three unpaired males. No floaters were detected.

The USGS banding crew captured three new flycatchers, recaptured six, and along with AGFD resighted the remaining 17 adults banded in previous years (Table 3). One hundred percent of the banded birds detected at Tonto Creek were assigned territories.

Table 3: Banded willow flycatchers detected at Tonto Creek Inflow in 2003. Data presented for each habitat patch are date first banded, federal bird band number, color band combination, age in 2003, sex, territory occupied in 2003, whether the bird was a confirmed resident of a territory, and capture status (new capture, recapture or resight).

Patch Name	Date First Banded	Federal Bird Band Number	Color Band		Age 2003	Sex	2003 Territory	Confirmed Resident of Territory	Status
			Left Leg	Right Leg					
Bar X	6/3/2003	2290-24201	GG	VG	AHY	F	14	Yes	New
	6/1/2001	2290-24310	VYV	DD	ATY	M*	14	Yes	Recapture
Tonto Creek	6/9/1998	1590-97527	WW	VV	A6Y	F	82	Yes	Resight
	5/18/2000	1710-20671	KK	WY	A4Y	M	18/19/82[1]	Yes	Resight
	6/2/2000	1710-20681	KK	RW	A4Y	M*	16	Yes	Resight
	6/3/1996	1740-91706	KY	XX	A8Y	M	50	Yes	Resight
	7/12/2000	2210-57071	RG	KK	A4Y	M	15	Yes	Resight
Orange Peel Campground	6/26/2001	1490-89936	RYR	ZZ	ATY	M	8/60[1]	Yes	Recapture
	5/11/1999	1590-97202	KR	XX	A7Y	M	2	Yes	Resight
	7/2/1999	1710-20217	ZZ	WD	A5Y	F	8	Yes	Resight
	6/18/2000	1710-20696	KK	RG	A4Y	F*	9	Yes	Resight
	5/18/2002	1740-51761	YY	XX	ASY	M	2/3[1]	Yes	Resight
	6/16/2002	1740-51779	XX	DYD	ASY	F	3	Yes	Resight
	6/19/2002	1740-51820	WZ	XX	ASY	F	2	Yes	Resight
	7/2/2002	2290-24271	GG	RR	TY	M*	10	Yes	Recapture
	6/24/2003	2290-24291	RKR	GG	AHY	F*	20	Yes	New
	6/27/2003	2290-24293	DWD	GG	AHY	F*	51	Yes	New
	5/9/2001	2290-24308	DD	KOK	ATY	M*	9/51[1]	Yes	Recapture
Orange Peel Flats	6/30/2001	1490-89804	RYR	VV	ATY	F*	17	Yes	Resight
	5/20/2001	1490-89908	ZZ	YO	ATY	M*	35	Yes	Resight
	7/28/1999	1710-20561	DO	VV	5Y	F	21	Yes	Resight
	6/28/2002	1740-51793	XX	WVW	TY	F	35	Yes	Resight
	7/10/2001	1740-51894	KK	KRK	TY	M	0	Yes	Recapture
	7/16/2002	2210-57308	UNB	XX	TY	M*	17	Yes	Recapture
	7/29/2002	2210-57319	XX	ZRZ	TY	M	21	Yes	Resight
	6/15/2003	2290-24236	GG	DYD	AHY	F	1[2,3]	Yes	Resight

Color band color codes: X=silver, **V**=violet, **Z**=gold, **K**=black, **D**=blue, **G**=green, **O**=orange, **R**=red, **W**=white, **Y**=yellow, and **UNB** = no band

Age: SY=2 years, **AHY**=2 years or older, **TY**=3 years, **ASY**=3 years or older, **4Y**=4 years, **ATY**=4 years or older, **5Y**=5 years old, **A4Y**=5 years or older, **A4Y**=5 years or older, **6Y**=6 years, **A5Y**=6 years or older, **7Y**= 7 years, **A6Y**=7 years or older, **8Y**=8 years, **A7Y**=8 years or older, **A8Y**=9 years or older

Sex: F=female, **M**=male, **U**=unknown

[1] Polygamous male

[2] Mate Switching

[3] Exhibited within season movement between patches

* Birds sexed in the field

2002/2003 ADULT SURVIVORSHIP

Survivorship is defined as the number of individuals that survive from the end of one breeding season to the beginning of the next breeding season. Survivorship is estimated from the number of banded flycatchers present in one year that are detected in the following years (return rate), and is based on resights and recaptures of banded individuals. It is known that a certain number of individuals that are alive in a particular year are not detected. Therefore, our return rates are minimum numbers, with actual survivorship some higher, unknown percent. Although true survivorship is unknown, it can be estimated based on the return rates and an estimate of how many birds may have been present but were not detected. In past reports, we have presented just return rates, and these numbers are still useful for comparisons with past years, especially at the patch level. In 2003, 113 of 212 banded adult flycatchers at Roosevelt Lake patches in 2002 returned to the same or a different breeding location. Two of these birds were detected at the San Pedro River and one at the Verde River. Thus, the overall 2002-2003 adult return rate was 53% (Table 4), while the maximum-likelihood survivorship estimate for 2003 was 66% (95% C.I.: 57%, 74%).

Table 4: Willow flycatcher survivorship at Roosevelt Lake from 2002 to 2003, organized by site and patch. Survivorship is the percent of the total number of banded adult flycatchers per patch present in 2002 that returned (to any patch) in 2003.

Site	Patch	# Banded Adults 2002	# from 2002 Detected in Any Patch in 2003	% Return Rate
Salt River Inflow	Old Salt	9	4	44
	Mudflats	4	2	50
	Shangri-la	43	23	53
	School House South 3	9	5	56
	School House North 1	12	7	58
	School House North 2	13	6	46
	Lake Shore	57	32	56
	North Shore 1	28	14	50
	North Shore 2	11	2	18
	Salt River Inflow Totals:	**186**	**95**	**51**
Tonto Creek Inflow	A+ Cross Road	1	0	0
	Tonto Creek	6	5	83
	Orange Peel Campground	11	8	73
	Orange Peel Flats	8	5	63
	Tonto Creek Totals:	**26**	**18**	**69**
Overall Totals		**212**	**113**	**53**

2002/2003 ADULT PATCH FIDELITY

Patch fidelity is defined as the percent of adult banded flycatchers that return to the same breeding patch used the previous year. It is calculated by dividing the number of banded birds that returned to their breeding patch in 2003 by the total number of banded birds at the patch in 2002. Also calculated is the percent of those flycatchers that returned in 2003 that went back to the same patch. This is sometimes a better estimate of patch fidelity since it eliminates those birds that did not return (assumed mortality) from the analysis. In this way, the analysis only takes into account the patch fidelity of those birds that returned in 2003. In this analysis we included only flycatchers that were territorial in 2002 (61% of the banded adult flycatchers detected in 2002). We found that 36% of adults detected in 2002 returned to the same breeding patch that they occupied in 2002 (Table 5). As well, we found that of the birds from 2002

that we detected in 2003, 62% showed patch fidelity by returning to the same breeding patch they occupied in 2002 (Table 5).

Table 5: Willow flycatcher patch fidelity at Roosevelt Lake from 2002 to 2003, organized by site and patch. The number of banded adults in 2002 includes only flycatchers that were territorial in 2002. Percent fidelity is the number of *all banded adults from 2002* that returned to the same patch they occupied in 2002, whereas percent of returning with patch fidelity only considers those banded *adults that returned in 2002*.

Site	Patch	# Banded Adults 2002	# Returned to Same Patch 2003	Patch Fidelity (%)	% of Returning With Patch Fidelity
Salt River Inflow	Old Salt	8	2	25	67
	Mudflats	3	1	33	50
	Shangri-la	32	16	50	94
	School House South 3	8	2	25	20
	School House North 1	11	4	36	57
	School House North 2	8	2	25	67
	Lake Shore	26	9	35	50
	North Shore 1	9	2	22	67
	North Shore 2	2	0	0	0
Salt River Inflow Patch Fidelity:		**107**	**38**	**36%**	**66%**
Tonto Creek Inflow	A+ Cross Road	1	0	0	0
	Tonto Creek	6	3	50	60
	Orange Peel Camp	8	2	25	33
	Orange Peel Flats	7	3	43	60
Tonto Creek Inflow Patch Fidelity:		**22**	**8**	**36%**	**50%**
Average:		**129**	**46**	**36%**	**62%**

2002/2003 ADULT SITE FIDELITY

We now consider the patches within each of the Salt River Inflow and Tonto Creek drainages to make up a single site, thus average patch fidelity is not true site fidelity. Site fidelity is the return rate of flycatchers to a site, either Salt River Inflow or Tonto Creek Inflow. In 2003, the site fidelities of Salt River and Tonto Creek were 52% and 50%, respectively, for an average site fidelity of 52% for Roosevelt Lake (Table 6). If only the banded birds that returned to Roosevelt Lake from 2002 are considered, eliminating birds from 2002 that were not detected in 2003 (presumed mortality), the site fidelity average is 91% for Roosevelt Lake (Table 6).

Table 6: Willow flycatcher site fidelity at Roosevelt Lake from 2002 to 2003. Table includes the number of banded, territorial adults in 2002, the number of those that returned to the same site in 2003, percent site fidelity of all banded birds in 2002, and percent of returning territorial banded birds that showed site fidelity. The number of banded adults in 2002 includes only flycatchers that were territorial in 2002.

Site	# Banded Adults 2002	# Returned to Same Site 2003	Site Fidelity (%)	% of Returning With Site Fidelity
Salt River Inflow	107	56	52	97
Tonto Creek	22	11	50	69
Average Site Fidelity	**129**	**67**	**52**	**91**

2002/2003 ADULT MOVEMENT

Between-year, Within-patch Movement

Within-patch movement is defined as the relocation of a territorial flycatcher from one nesting or territorial area to a new nesting or territorial area within a breeding patch. Because flycatcher territories vary in size and precise territorial boundaries were not mapped, flycatchers were considered to have moved only if they were resighted or recaptured >50 m from a previous resight/capture area or nest location.

Between-year movement within patches is defined as the relocation of a flycatcher within the previous year's breeding patch. Of the 46 returning territorial flycatchers that returned to their previous year's breeding patch, 28 (61%) settled in approximately the same area and 18 (39%) moved >50 m (Table 7). The average distance moved by a flycatcher within a patch, between 2002 and 2003, was 167 m (range = 57 to 658 m). Flycatchers that were not detected last year but returned to the same patch they used in 2003 were not included in this analysis of movement.

Table 7: Between-year, within-patch movement of adult willow flycatchers returning to the same breeding site in Roosevelt Lake, Arizona between 2002 and 2003. Average and range of distance moved (in meters) is included for those flycatchers that moved greater than 50 m. This table only includes birds that were territorial in 2002.

Site	Patch	# Birds Returning to Breeding Patch	# (%) Birds moved > 50 m	Average Distance Moved (m)	Range of Distances Moved (m)
Salt River Inflow	Old Salt	2	2 (100)	111	73-148
	Mudflats	1	1 (100)	81	81
	Shangri-la	16	5 (31)	197	57-421
	School House South 3	2	1 (50)	105	105
	School House North 1	4	1 (25)	75	75
	School House North 2	2	2 (100)	237	107-352
	Lake Shore	9	3 (33)	103	83-126
	North Shore 1	2	1 (50)	58	58
	North Shore 2	0	N/A	N/A	N/A
Salt River Inflow Movement:		**38**	**16 (42)**	**143**	**57-421**
Tonto Creek Inflow	A+ Cross Road	0	N/A	N/A	N/A
	Tonto Creek Inflow	3	1 (33)	658	658
	Orange Peel Campground	2	0	0	0
	Orange Peel Flats	3	1 (33)	58	58
Tonto Creek Inflow Movement:		**8**	**2 (25)**	**358**	**58-658**
Overall Totals		**46**	**18 (39)**	**167**	**57-658**

Between-year, Between-patch Movement

Between-patch movement is defined as flycatcher movement from one breeding patch to another breeding patch, and may occur between and within years. Year to year movement between-patches may occur within and between drainages, the latter being less common. In addition to resighting at Roosevelt Lake, in 2003, we intensively resighted at San Pedro River to detect movements away from Roosevelt Lake. Furthermore, we resighted at the Verde River, White Mountains, and Alamo Lake to increase the likelihood of detecting long distance movements in 2003.

In 2003, we detected 60 within-drainage between-patch movements and 18 between-drainage movements by adult flycatchers between 2001 or 2002 and 2003 (Table 8). Of the 18 between-drainage movements, 13 were between Salt River and Tonto Creek , two were birds that moved from Roosevelt Lake to San Pedro, two moved from San Pedro to Roosevelt Lake and one moved from Roosevelt Lake to the Verde River.

Table 8: Adult southwestern willow flycatchers at Roosevelt Lake, 2003, that exhibited between-year, between-patch movement from 2002 to 2003. Birds that were detected in 2001 but not in 2002 are also included. Birds that were detected in two patches in 2003 are only recorded once in the table. Table includes distance moved in km, color band combination, federal bird band number, 2003 age, and sex.

Patch Detected in 2002 (unless previous year noted)	Patch Detected in 2003	Distance Moved (km)	Color Band		Federal Bird Band Number	Age 2003	Sex
			Left Leg	Right Leg			
Old Salt	Shangri-la	1.4	KW	XX	1710-20473	A6Y	M*
	Aravaipa North[1]	82.8	RO	XX	1740-51792	ASY	U
Shangri-la	Mudflats	0.4	KG	ZZ	1710-20240	A3Y	F*
	School House South 3	1.5	DO	ZZ	1710-20219	A3Y	M*
	North Shore 1	2.5	XX	YKY	1740-51754	ASY	F*
			YY	XX	1740-51722	3Y	M*
Shangri-la (2001)	Old Salt	1.4	OD	KK	1740-91596	4Y	M
	School House North 1	1.0	OKO	ZZ	1710-20245	3Y	F*
	School House North 2	2	DD	ZZ	1710-20233	3Y	M*
			DK	KK	2210-57052	3Y	F*
			YKY	ZZ	1490-89954	3Y	M*
	Lake Shore	1.9	KV	KK	2210-57059	TY	F*
	North Shore 1	2.5	KK	KYK	2210-57053	TY	M*
			OKO	KK	2210-57034	TY	F*
			ZZ	KGK	1490-89913	4Y	M*
			ZZ	OK	1490-89950	3Y	F*
			ZZ	RK	1710-20226	3Y	M*
School House South 3	North Shore 1	1.6	DD	WRW	2290-24302	A4Y	M
			RW	XX	1740-91506	A8Y	M
			YD	XX	1740-51778	ASY	F*
School House North 1	Mudflats	1	XX	OK	1740-51797	ASY	M*
	Shangri-la	0.9	DWD	XX	1740-51758	ASY	F*
	North Shore 1	2	KK	KOK	1740-91970	A4Y	M
School House North 1 (2001)	North Shore 1	2	RY	KK	1740-51857	4Y	F
School House North 2	North Shore 1	1.6	RKR	DD	2290-24312	4Y	M

Patch Detected in 2002 (unless previous year noted)	Patch Detected in 2003	Distance Moved (km)	Color Band		Federal Bird Band Number	Age 2003	Sex
			Left Leg	Right Leg			
	Orange Peel Campground	26.3	WZ	XX	1740-51820	ASY	F*
Lake Shore	Old Salt	3.5	XX	OD	1740-51720	ASY	M*
	Shangri-la	1.9	WV	XX	1740-51715	3Y	F*
	School House South 3	1	KGK	DD	2290-24304	3Y	M*
			DYD	DD	2210-57313	ASY	M*
	School House North 1	1.6	VV	OO	1710-20275	A5Y	M
			VWV	XX	2210-57309	TY	M*
	School House North 2	1.2	KGK	XX	2210-57306	ASY	M*
			KYK	ZZ	1710-20225	3Y	M*
	North Shore 1	0.5	DY	KK	2210-57093	3Y	M*
			KK	DD	2210-57014	4Y	F
			KK	KV	1710-20604	A4Y	M
			VV	RYR	1710-20288	5Y	M
			WG	KK	1710-46325	A4Y	F
			XX	KWK	2210-57301	ASY	F*
			XX	RKR	1740-51716	ASY	F*
			XX	WK	1740-51785	ASY	M*
			XX	YRY	2210-57304	ASY	M*
			ZO	XX	2280-96761	ASY	M*
			ZZ	KYK	1490-89934	4Y	F*
	North Shore 2	1.1	XX	ZKZ	2210-57305	ASY	M*
	Orange Peel Flats	25	UNB	XX	2210-57308	3Y	M*
			XX	ZRZ	2210-57319	3Y	M*
	San Manuel Crossing[1]	82.8	VG	XX	1740-51713	ASY	U
Lake Shore (2001)	Shangri-la	1.9	VV	DWD	1490-89805	4Y	F
	School House South 3	1	GG	KY	2290-24202	4Y	M*
	School House North 1	1.6	DY	ZZ	1710-20462	A3Y	M
	North Shore 1	0.5	KK	WR	1710-20699	A4Y	M
			OG	KK	2210-57075	4Y	F
	Tonto	25.9	WW	VV	1590-97527	A6Y	F
North Shore 1	Old Salt	4.3	KO	XX	1740-51730	ASY	M*
	Lake Shore	0.5	XX	ZO	2210-57326	TY	F*
	School House North 2	1.6	DRD	KK	2210-57032	TY	M*
	North Shore 2	0.7	VV	YDY	1490-89793	SY	F*
	Orange Peel Campground	25.4	GG	RR	2290-24271	TY	M*
			XX	DYD	1740-51779	ASY	F*
	Orange Peel Flats	24.5	XX	WVW	1740-51793	TY	F*
	Bar X	32.2	VYV	DD	2290-24310	ATY	M*
	Horseshoe Reservoir[2]	49	XX	YDY	1740-51742	TY	M*
North Shore 2	North Shore 1	0.7	GRG	XX	1740-51791	ASY	M*
			XX	RZ	1740-51753	ASY	F*
			XX	WG	1740-51756	ASY	M*

Patch Detected in 2002 (unless previous year noted)	Patch Detected in 2003	Distance Moved (km)	Color Band		Federal Bird Band Number	Age 2003	Sex
			Left Leg	Right Leg			
Orange Peel Camp Ground	Old Salt	28.1	XX	OZ	1740-51774	ASY	F*
	School House South 3	25.8	WG	ZZ	1710-20500	ATY	F*
Orange Peel Camp Ground	School House North 2	26	XX	KG	1740-51748	ASY	F*
	North Shore 1	25.3	DD	OKO	2210-57307	ATY	M*
	Tonto Creek	0.7	KK	RW	1710-20681	ASY	M*
Orange Peel Flats	Shangri-la	25.8	DK	XX	1740-51745	ASY	F*
	Orange Peel Campground	0.9	YY	XX	1740-51761	ASY	M*
Tonto Creek	Orange Peel Campground	0.7	KR	XX	1590-97202	A7Y	M
			RYR	ZZ	1490-89936	A3Y	M*
Aravaipa South[1]	Orange Peel Campground	108.1	ZZ	WD	1710-20217	A4Y	F
Dudleyville[1]	Shangri-la	82.8	DD	KK	1740-91866	A6Y	M

* Birds sexed in the field
[1] Lower San Pedro River
[2] Verde River

Same-year, Within-patch Movement

Same-year movement within-patches occurs when a flycatcher that defended a territory or nest area moves within the same breeding season to a different territory or nest area within the breeding patch. Nine flycatchers were detected moving within-patch during the 2003 breeding season. Two individuals were recaptured near the end of the breeding season outside of their breeding patch in North Shore 1. These birds moved approximately 200 meters. Three males were resighted in different territories within their breeding patch before they finally settled in a territory. These movements occurred early in the breeding season and ranged from 183 meters to 470 meters.

Three females switched males and moved small distances in their breeding patch (less than 50 m). Two other females exhibited mate switching but moved to different sites and paired with a new male (same-year between-patch movement).

Same-year, Between-patch Movement

Same-year movement between-patches occurred on 12 occasions in 2003 (Table 9). Most of the flycatchers moved between patches along the Salt River Inflow. However, one female moved from a territory in Shangri-la to re-nest in Orange Peel Flats. Three male flycatchers were detected via telemetry making long distance movements between sites. This illustrates an important point that some of these between-patch movements did not involve permanent relocation. In at least three of the cases where birds exhibited movement (Table 9), they were detected via telemetry moving back and forth between patches and did not necessarily settle in a different patch; these movements would not have been detected without telemetry.

Table 9: Adult willow flycatchers at Roosevelt Lake that exhibited same-year, between-patch movement in 2003. Included are patches detected in 2002 and 2003, the distance moved, federal bird band number, color combination, age in 2003, and sex.

Patch First Detected	Patch Later Detected	Distance Moved (km)	Federal Bird band Number	Color Band		Age 2003	Sex
				Left Leg	Right Leg		
Old Salt	Shangri-la	1.4	1740-51720	XX	OD	ASY	M*
Shangri-la	Orange Peel Flats	25.8	2290-24236	GG	DYD	AHY	F*
School House South 3	North Shore 1	1.6	2290-24202	GG	KY	4Y	M*
	School House North 1	0.8	2290-24282	GG	RDR	AHY	F*
	Grapevine[2]	3.2[1]	1710-20219	DO	ZZ	ATY	M*
School House North 1	North Shore 2	2.0[1]	2290-24314	DD	DWD	A4Y	M*
School House North 2	School House South 3	0.8	2290-24304	KGK	DD	TY	M*
Lake Shore	North Shore 1	0.5	2210-57307	DD	OKO	ATY	M*
	School House North 2	1.2	2290-24221	GG	OO	AHY	M*
North Shore 1	Lake Shore	0.5	2290-24309	DD	VWV	TY	M*
	Grapevine[2]	2.4[1]	2290-24313	DD	YKY	AHY	M*
	Shangri-la	2.5	2290-24287	GG	KD	AHY	F*

* Birds sexed in the field
[1] Movements detected via radio-telemetry
[2] Grapevine is an area of very young, non-breeding riparian habitat downstream of the North Shore patch on the Salt River

2003 Nestling Banding

We banded a total of 120 nestlings (from 53 nests) at Roosevelt Lake in 2003 (Table 10). In addition we banded 4 fledglings from unknown nests that were caught in passive nets from Shangri-la, Lake Shore and North Shore 1 (Table 10). Nestlings banded in 2003 received a violet-anodized federal bird band on one leg.

Table 10: Willow flycatcher nestlings and fledglings banded in 2003 at Roosevelt Lake. Table includes patch banded in, territory and nest number, date banded, federal bird band number, and color band combination.

Patch	2003 Territory and Nest	Date Banded	Federal Bird Band Number	Color Band	
				Left Leg	Right Leg
Old Salt	50A	6/27/2003	1710-20270	UNB	VV
			1710-20311	UNB	VV
Shangri-la	0A	6/21/2003	1490-89892	VV	UNB
	1A	7/23/2003	1490-89726	UNB	VV
			1490-89727	UNB	VV
	4A	6/18/2003	1490-89878	VV	UNB
			1490-89879	VV	UNB
			1490-89880	UNB	VV
	10B	7/12/2003	1490-89741	UNB	VV
			1490-89742	UNB	VV
	16B	7/12/2003	1490-89740	VV	UNB
	17A	6/27/2003	1710-20312	UNB	VV
			1710-20313	UNB	VV
	18A	7/27/2003	1490-89749	UNB	VV
			1490-89750	UNB	VV
			1490-89751	UNB	VV
	19A	6/27/2003	1490-89836	VV	UNB
			1490-89837	VV	UNB
			1490-89838	VV	UNB
	21A	6/18/2003	1490-89875	UNB	VV

Patch	2003 Territory and Nest	Date Banded	Federal Bird Band Number	Color Band	
				Left Leg	Right Leg
			1490-89876	UNB	VV
			1490-89877	UNB	VV
	35B	6/21/2003	1740-51632	UNB	VV
			1740-51633	UNB	VV
			1740-51634	UNB	VV
	52B	7/25/2003	1740-51625	UNB	VV
			1740-51626	UNB	VV
	55A	6/21/2003	1490-89893	UNB	VV
			1490-89894	VV	UNB
			1490-89895	VV	UNB
	55B	7/27/2003	1490-89731	UNB	VV
			1490-89732	UNB	VV
	59A	7/2/2003	1490-89828	VV	UNB
			1490-89829	VV	UNB
			1490-89830	VV	UNB
Shangri-la	69A	6/21/2003	1490-89890	UNB	VV
			1490-89891	UNB	VV
	89A	7/7/2003	1490-89808	VV	UNB
			1490-89809	VV	UNB
Shangri-la (Fledglings)	N/A	7/24/2003	1490-89729	VV	UNB
		7/28/2003	1490-89789	VV	UNB
School House South 3	0C	7/3/2003	1490-89849	UNB	VV
	30A	7/1/2003	1490-89896	UNB	VV
	73A	7/8/2003	1490-89748	VV	UNB
School House North 1	26A	7/1/2003	1490-89897	UNB	VV
			1490-89898	UNB	VV

Patch	2003 Territory and Nest	Date Banded	Federal Bird Band Number	Color Band	
				Left Leg	Right Leg
			1490-89899	UNB	VV
	84A	7/2/2003	1490-89807	VV	UNB
			1490-89900	VV	UNB
School House North 2	50B	7/2/2003	1490-89747	UNB	VV
			1710-20318	UNB	VV
			1710-20319	UNB	VV
	82A	6/30/2003	1710-20314	VV	UNB
			1710-20315	VV	UNB
	83A	6/29/2003	1490-89787	VV	UNB
			1490-89788	VV	UNB
Lake Shore	6A	7/8/2003	1490-89846	UNB	VV
			1490-89845	UNB	VV
			1490-89810	UNB	VV
	12A	7/3/2003	1490-89848	UNB	VV
			1490-89847	UNB	VV
Lake Shore (Fledgling)	N/A	7/11/2003	1490-89795	UNB	VV
North Shore 1	2B	6/27/2003	1490-89856	VV	UNB
			1490-89857	VV	UNB
			1490-89858	VV	UNB
	3A	6/29/2003	1490-89794	UNB	VV
	4A	6/21/2003	1740-51636	VV	UNB
			1740-51635	VV	UNB
	18A	6/30/2003	1490-89774	UNB	VV
	19A	6/30/2003	1490-89771	VV	UNB
			1490-89772	VV	UNB
			1490-89773	VV	UNB

Patch	2003 Territory and Nest	Date Banded	Federal Bird Band Number	Color Band	
				Left Leg	Right Leg
	24A	6/30/2003	1490-89769	UNB	VV
			1490-89770	UNB	VV
	25A	6/27/2003	1490-89825	UNB	VV
			1490-89826	UNB	VV
			1490-89827	UNB	VV
	31A	6/26/2003	1490-89888	VV	UNB
			1490-89889	VV	UNB
	33A	6/27/2003	1490-89855	UNB	VV
North Shore 1	34A	6/24/2003	1490-89818	UNB	VV
			1490-89819	VV	UNB
			1490-89820	UNB	VV
	35A	6/21/2003	1740-51638	UNB	VV
			1740-51639	UNB	VV
			1740-51640	UNB	VV
	37A	6/27/2003	1490-89852	VV	UNB
			1490-89853	VV	UNB
			1490-89854	VV	UNB
	41B	6/19/2003	1490-89884	UNB	VV
			1490-89885	UNB	VV
			1490-89886	UNB	VV
			1490-89887	UNB	VV
	42A	6/24/2003	1490-89812	UNB	VV
			1490-89813	UNB	VV
			1490-89814	UNB	VV
			1490-89815	UNB	VV
	54B	7/9/2003	1490-89842	UNB	VV

Patch	2003 Territory and Nest	Date Banded	Federal Bird Band Number	Color Band	
				Left Leg	Right Leg
			1490-89843	VV	UNB
			1490-89844	VV	UNB
	74A	7/10/2003	1490-89831	VV	UNB
			1490-89832	VV	UNB
	89A	6/19/2003	1490-89881	UNB	VV
			1490-89882	UNB	VV
			1490-89883	UNB	VV
	96B	6/27/2003	1490-89779	UNB	VV
			1490-89786	UNB	VV
	98A	6/29/2003	1490-89764	UNB	VV
	101A	6/15/2003	1490-89811	UNB	VV
North Shore 1 (Fledgling)	N/A	7/15/2003	1490-89790	VV	UNB
North Shore 2	7B	7/16/2003	1490-89775	VV	UNB
Orange Peel Campground	20A	6/24/2003	1490-89861	VV	UNB
			1490-89862	VV	UNB
			1490-89863	VV	UNB
	20B	7/23/2003	1490-89728	VV	UNB
Orange Peel Flats	0A	6/28/2003	1490-89783	UNB	VV
			1490-89784	UNB	VV
			1490-89785	UNB	VV
	21A	6/28/2003	1490-89780	VV	UNB
			1490-89781	VV	UNB
			1490-89782	VV	UNB
Tonto	16A	6/28/2003	1490-89765	VV	UNB
			1490-89766	VV	UNB
			1490-89767	VV	UNB

First Year Survivorship and Movement

In 2002, we banded two nestlings and one fledgling from two patches at Roosevelt Lake; one nestling was recaptured in 2003 (Table 11). Thus, 2002-2003 first year return rate (based on the one nestling from 2002 banded) was 33%. Eleven returning flycatchers banded as nestlings in 2001 were recaptured in 2003 (Table 11), including one recaptured at the Verde River. The detection of these three year olds increase the return rate estimate for 2001 nestlings from 18% to 27%. These return rates resulted in survivorship estimates of 67% survivorship in 2002/2003, and 39% survivorship in 2001-2002.

Table 11: Willow flycatcher nestlings banded in previous years that were first detected in 2003. Table includes natal banding patch, patch detected in 2003, the distance moved from natal banding patch, federal bird band number, color band combination, natal banding date and sex.

Natal Banding Patch	Patch Detected in 2003	Distance Moved (km)	Federal Bird Band Number	Color Band		Natal Date Banded	Sex
				Left Leg	Right Leg		
Shangri-la	School House North 1	1	1710-20245	OKO	ZZ	06/16/2001	F*
	School House North 2	2	1490-89954	YKY	ZZ	06/20/2001	M*
			2210-57052	DK	KK	07/12/2001	F*
			1710-20233	DD	ZZ	06/25/2001	M*
	Lake Shore	1.9	2210-57059	KV	KK	07/27/2001	F*
	North Shore 1	2.5	2210-57053	KK	KYK	07/12/2001	M*
			2210-57034	OKO	KK	07/01/2001	F*
			1490-89950	ZZ	OK	06/20/2001	F*
			1710-20226	ZZ	RK	06/25/2001	M*
Lake Shore	North Shore 1	0.5	1740-51870	DYD	KK	07/17/2001	M*
North Shore 1	North Shore 2	0.7	1490-89793	VV	YDY	08/15/2002	F*
Orange Peel Campground	Horseshoe Reservoir (Verde River)	52	1740-51893	KD	KK	07/10/2001	F*

Field Sex: F=female, M=male
* Birds sexed in the field

PASSIVE NETTING

Passive netting efforts were continued this season in order to detect non-breeding (floater) flycatchers at Roosevelt Lake. The total number of individuals caught through passive netting in 2003 was 28 (10 new captures and 18 recaptures), plus five additional fledglings (one of which was a recapture of a nestling banded in the nest). At Lake Shore, our main site for these efforts, we captured 14 adults and two fledglings, which equates to 2.075 birds/100 net hours. In addition to the main effort at Lake Shore, we passive netted at Shangri-la and North Shore 1 and 2. Five of the recaptured adult birds were post-breeding dispersers, caught at a different site than where they originally bred in. Overall, there were five new captured adults that were determined to be floaters; these came from the Shangri-la and North Shore patches, with no floaters detected in Lake Shore.

DISCUSSION

This season at Roosevelt Lake was highly successful and productive in terms of our ability to conduct research on the willow flycatcher. In 2003, 98% of flycatchers were confirmed to territories; only four birds out of 230 (2%) could not be confirmed to a territory. Last year, territories could only be assigned and confirmed for 51% of all banded adults due to the challenge of resighting birds that were not behaving territorial. The 2003 breeding season provides yet another year of important demographic data on the flycatcher, and also an opportunity to evaluate the aftereffects of the 2002 drought through comparisons with 2003 data.

2003 BANDING AND RESIGHTING EFFORTS

Captures

Overall, 54 new adult, 120 nestling and four fledgling willow flycatchers were banded in 2003. In addition, 147 adults banded in previous years were detected through resights and recaptures. Although the number of new adults banded in 2003 is low compared to the 99 new captures in 2002, this is a reflection of the small number of unbanded adults detected, presumably due to the low productivity in 2002. Even though we did not capture as many new adult flycatchers, we ended the season with 88% of all adult flycatchers detected at Roosevelt Lake being banded. This was the most successful year in terms of the percentage of birds that were banded at the end of the season, as well as the number of nestlings that were banded. In addition, we caught one of the three 2002 banded nestlings, and an additional 11 nestlings banded in 2001.

From 1996 to 2003, we banded 484 adult and 374 nestling or fledgling southwestern willow flycatchers at Roosevelt Lake; as a result, 68% or more of all flycatchers detected at Roosevelt Lake within a given year were banded (Paxton and Sogge 1996, Paxton et al. 1997, Netter et al. 1998, English et al. 1999, Luff et al. 2000, Kenwood and Paxton 2001, and Koronkiewicz et al. 2002). This large number of banded flycatchers will be important after the habitat is inundated, as we will have a better chance of detecting Roosevelt Lake flycatchers that move to other sites.

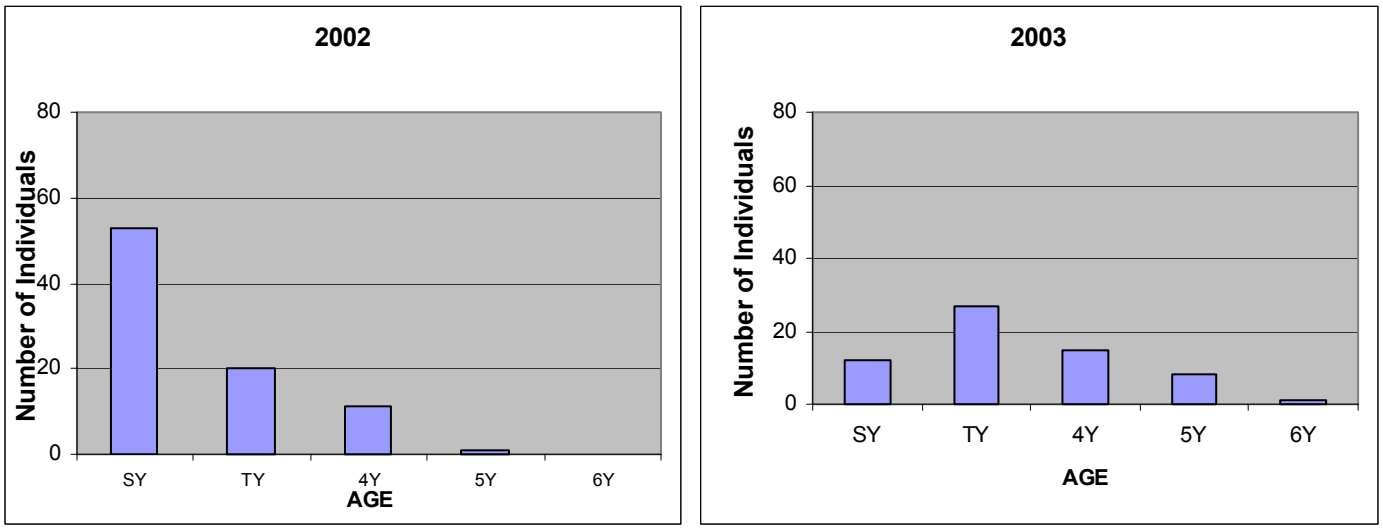

Figure 3: Age structure of Willow Flycatchers at Roosevelt Lake in 2002 and 2003. Ages are as follows: **SY**=2 calendar years or age, **TY**=3 calendar years of age**, 4Y**=4 calendar years of age, **5Y**=5 calendar years of age, **6Y**=6 calendar years of age.

Age Structure

With the adoption of the retained feather aging method, and aging returning nestlings that are of known age, we were able to definitively age 63 of the 202 (31%) banded willow flycatcher adults at Roosevelt Lake in 2003 (Fig. 3). The age structure seen in 2002, which is composed of a relatively young population, is characteristic of a growing population. The 2002 age structure is similar to the structure seen in previous years. In 2003, the age structure became noticeably older, with three and four year olds occurring in the highest frequency. This is presumably due to the low productivity in 2002, which provided for few potential second year birds in 2003. We believe this older, non-typical (compared to the past years at Roosevelt Lake) age structure in the Roosevelt Lake population will persist for several more years to come. Given the high productivity of 2003, the structure is expected to become bi-modal in 2004, with a large SY component and a smaller 4Y peak.

Population Trends

After six years of population growth, 2003 was the first year where a decline was observed in the Roosevelt Lake population. The total number of adult birds detected this year (230) was lower than 2002 (273) and 2001 (245) (Fig. 4). The population decreased by 43 adults, a decline of 16% below 2002's estimated population, and presumably due to last year's extremely low productivity.

In addition to changes in population numbers, we continued to observe changes in the number of breeders occupying the various patches at Roosevelt Lake. In 2003, North Shore 1 had the highest percentage of birds (26.5%), followed by Shangri-la (23%), School House North 2 (8.7%), Lake Shore (7.1%) and Orange Peel Campground (7.1%). This has changed somewhat

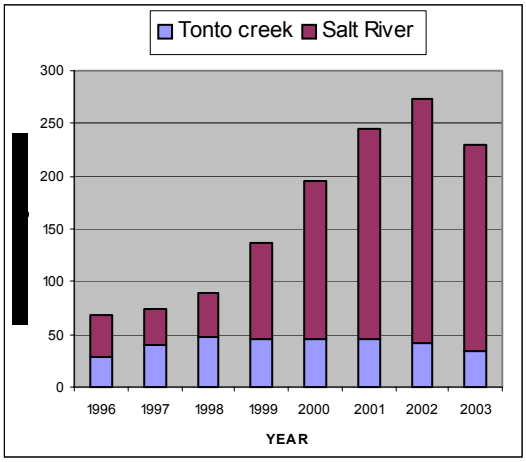

Figure 4: Population of willow flycatchers at Roosevelt Lake from 1996-2003.

from 2002 where the highest percentage of birds was in Lake Shore (24%), followed by Shangri-la (23.7%) and then North Shore 1 (12.5%). Overall, the population trend has been a gradual move toward occupying younger habitat. The site with the largest number of breeders this year, North Shore 1, is the youngest occupied habitat at Roosevelt Lake. In the past we have noted that the younger sites have a high percentage of young birds; this held true in 2003, but it is important to note that that birds of all ages are moving to younger habitat.

ADULT SURVIVORSHIP

The estimated 2002-2003 return rate for Roosevelt Lake, based on 113 returning banded adults, was 53%. One problem with calculating survivorship is that it assumes that all living, banded flycatchers are detected. This year we detected 34 flycatchers at Roosevelt Lake that were detected in 2001, but not detected in 2002, and one bird detected in 2000, but not in 2001 or 2002. Recalculating the return rates for those years by including these individuals increases the 2000-2001 corrected return rate from 68% to 69%, and the 2001-2002 return rate from 46% to 63%. Thus, the hypothesis by Koronkiewicz et al. (2002) that low survivorship in 2002 was most likely due to low detection rates is supported by the corrected estimate for survivorship, which is higher than originally estimated and is more typical of past years. Due to our resight efforts at the San Pedro River and the Verde River, the chance of a banded flycatcher that moved to another drainage being detected via resighting or recapture was higher than in the past two years. This means survivorship estimates in 2003 should be more accurate.

Because not all flycatchers are detected in a given year, the return rates underestimate the true survival rate. By estimating the probability of not detecting a banded flycatcher in a given year, we are able to provide better estimates of the true survivorship of adults. These are higher than the return rates, because the model used tries to estimate the number of flycatchers undetected, but alive. Estimating survivorship for past years indicates that the average survivorship for the Roosevelt Lake flycatcher population is 66%, with an upper 95% confidence interval of 75% (Table 12).

Table 12: Adult Willow Flycatcher survivorship estimates for Roosevelt Lake, 1998-2003. For each between-year survivorship is the return rate, survivorship estimate, and the upper 95% confidence interval. In all cases (except 2002/2003), the return rate was greater than the lower 95% C.I.

Year	Return Rate (%)	Survivorship Estimate (%)	Upper 95% C.I. (%)
1998/1999	58	65	78
1999/2000	53	57	67
2000/2001	69	73	81
2001/2002	63	68	76
2002/2003	53	66	74
Average	**59**	**66**	**75**

ADULT SITE FIDELITY, PATCH FIDELITY AND MOVEMENT

Site and Patch Fidelity

Flycatchers that survive the winter and return to the breeding grounds have a choice between returning to the approximate area where they bred the year before, or to move to a new breeding location. Based on banding results from 1997 to 2003, we know that a high number of flycatchers move to different breeding patches and sites from one year to the next. In the past, we have presented site fidelity (returning to the same site) and movement among sites based on definitions of most habitat patches being separate sites. However, the degree of movement observed indicates that a site, to the flycatcher, is best defined by their movements. Therefore, since 2001 we have considered all patches within the Salt River Inflow as one site, and all patches within the Tonto Creek Inflow as one site. For the highest resolution, we have presented the return patterns by patch, which can be compared with past "site"-level (now patch-level) data, as well as site fidelity.

Over the last six years, 1997-2002, average patch fidelity rates ranged from 35% to 44%. Our 2002-2003 average patch fidelity rate of 36% is at the lower end of this range. However, with the more encompassing definition of site adopted in 2001, the site fidelity for Roosevelt Lake was 52% in 2003 (67 of 129 territorial banded birds from 2002). This compares to 42% in 2002 and 61% in 2001.

Calculating site fidelity as the number of flycatchers returning to a site divided by the total number of banded birds present at that site the year before is convenient for comparisons among sites and to other studies, but it does not differentiate between fidelity based on mortality versus choice. Because this study encompasses all known occupied willow flycatcher areas at Roosevelt Lake, most local movements are readily detected. Thus, it is instructive to look at an alternate calculation of site fidelity – the percentage of birds known to *survive*, thus having the choice between site fidelity or movement. In this calculation, 62% (46 of 74) of known surviving territorial 2002 adults returned in 2003 to the same breeding patch and 91% (67 of 74) to the same site.

Adult Movement

Between-year movement between-patches gives us an indication of the dynamic nature of habitat use by the willow flycatcher. This year we observed a large peak in the already high degree of movement at Roosevelt Lake. Sixty between-year, between-patch movements were documented in 2003, compared to five in 1999, 10 in 2000, 20 in 2001, and 19 in 2002. In addition, we detected a record 13 adult flycatchers that moved between the Tonto and Salt sites, as compared to zero to nine movements observed in a given year since 1997. Even among those adults that returned to the same breeding patch, 39% moved to an area that was > 50 m from their previous year's breeding area. This could either be due to the availability of younger patches or as a result of the 2002 drought, or a combination of both.

In 2001 and 2002, efforts at detecting movements were based exclusively at Roosevelt Lake; however, in order to detect movements from Roosevelt Lake to other sites in Arizona, resighting was also conducted at the San Pedro River by USGS in 2003. In addition, resighting was conducted at Verde River, White Mountains, and Alamo Lake. Our aim of resighting at the Lower San Pedro River site was to detect birds that may have been influenced by the 2002 drought and moved away from Roosevelt Lake. Despite efforts to detect movements, unusually high levels of movement between drainages were not detected. Nonetheless, cross drainage movements were higher this year than in past years with six in 2003, with no more than three seen in any single year since this study began.

Same-year movement was also observed within-and between-sites in 2003. Nine adults moved to different locations within the same patch; eight moved between-patches but within the same site, and four flycatchers moved between sites.

These levels of observed movement have significant implications to genetic structure, site tenacity, and response to habitat modification and/or destruction. This level of population movement and resultant genetic mixing helps explain the patterns of high genetic diversity within, and low population structuring (e.g., low reproductive isolation) among willow flycatcher populations in the Southwest (Busch et al. 2000). These types of movements also provide a reminder that flycatchers may view sites, corridors, and habitat patchiness and isolation differently than we typically do.

Detection of continuous movement of flycatchers throughout the breeding season, both within and between different sites, underscores that surveys throughout the breeding season are essential for accurate population estimates of breeding willow flycatchers. In fact, accurate population estimates in large, densely populated breeding sites may require intense color-banding and tracking of individual birds. Additionally, our data indicate that areas within suitable habitat that are unoccupied early in the breeding season may become occupied later as flycatchers resettle territories. Furthermore, the presence of a flycatcher at a territory throughout the breeding season does not mean that it is the same individual, as reshuffling and replacement of individuals does occur. Although a flycatcher territory may be occupied in consecutive years and have nearly identical territory boundaries in both years, it may not be occupied by the same willow flycatcher.

NESTLING BANDING, SURVIVORSHIP AND MOVEMENT

This year, based on a single individual, we recorded the highest return rate ever for a cohort of banded nestlings that returned from a previous year. One of the only three nestlings/fledglings banded in 2002 returned to Roosevelt Lake, resulting in a return rate of 33%, and an estimated survivorship of 67%.

Over the past years, we observed that many banded nestlings are not detected for two or more years after being banded. In 2003, 11 nestlings banded in 2001 were detected for the first time. This increases 2002 juvenile return rates from 18% to 27%. This is within the normal range of juvenile return rates seen over the last several years (Table 12). Normally we would expect to detect more 2002 banded nestlings in future years; however, this seems unlikely as so few nestlings were banded in 2002.

Table 13: Juvenile Willow Flycatcher survivorship estimates for Roosevelt Lake, 1998-2003. For each between-year survivorship is the return rate, survivorship estimate, and the upper 95% confidence interval. In all cases, the return rate was greater than the lower 95% C.I. Detection probability was fixed at 0.5% for all years.

Year	Return Rate (%)	Survivorship Estimate (%)	Upper 95% C.I. (%)
1998/1999	22	42	82
1999/2000	32	24	40
2000/2001	30	40	56
2001/2002	27	39	52
2002/2003	33	67	99
Average	**29**	**42**	**66**

PASSIVE NETTING AND DETECTION OF NON-BREEDING FLYCATCHERS

In our efforts to detect floaters, we continued passive netting efforts at Lake Shore in 2003 for the third year in a row, and expanded the efforts to include Shangri-la, and North Shore 1 and 2. Although we were able to devote a similar effort in Lake Shore as in 2002, we captured markedly fewer flycatchers (N=22; 2.08 flycatchers/100 net hours). This compares with 97 captures for 4.77 birds/100 net hours in 2002. In 2001, we captured 22 individual flycatchers in Lake Shore of which eight (36%) were assumed to be floaters. In 2002, we caught 68 individuals of which eight (12%) were assumed to be floaters and 34 (50%) that were not territorial residents. Overall, 62% of flycatchers caught passively at Lake Shore were non-territorial in 2002. Some of these birds could have been breeders that were not detected; however, our intensive resighting efforts make us confident that few of these birds were breeders at Lake Shore or surrounding areas. In 2003, of the 16 individual flycatchers caught in Lake Shore, none were floaters. However, five floaters were detected in Shangri-la and North Shore 1, where we conducted additional passive netting.

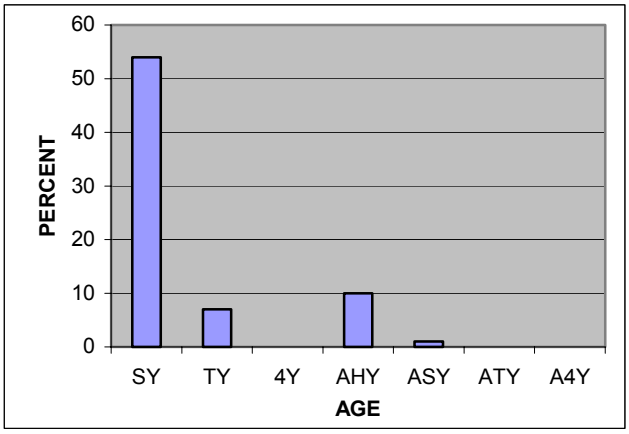

Figure 5: Age Structure of presumed floater population in 2002. Shown is the percent of floaters in each age category. Age classes are as follows: SY=second calendar year, TY=third calendar year, AHY=at least two calendar years, and ASY=at least three calendar years.

The reduced number of floaters observed is probably due to the low productivity of the previous year, as floaters are overwhelmingly young birds (Fig. 5). In addition, with the population decline, there are likely to be more suitable territories vacant for all the adults present in Roosevelt Lake in 2003. Of the eight birds considered floaters in 2002, one was territorial in 2003; however, 38 adults of unknown status in 2002 (and possibly floaters) were detected as territorial in 2003. Therefore, there is some evidence that floaters in one year may become territorial breeders in a following year, but more years of monitoring are needed to explore the full extent of this phenomenon. Given the success of the passive netting project this year, and the important management and conservation implications of these findings, we anticipate continuing the efforts for next year.

ACKNOWLEDGMENTS

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APPENDIX 1: WILLOW FLYCATCHERS BANDED BY USGS AT ROOSEVELT LAKE 1996 THROUGH 2003

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected							
							1996	1997	1998	1999	2000	2001	2002	2003
1490-89726	:V	Salt River	Shangri-la	N	U	7/23/2003								X
1490-89727	:V	Salt River	Shangri-la	N	U	7/23/2003								X
1490-89728	V:	Tonto Creek	Orange Peel Camp	N	U	7/23/2003								X
1490-89729	V:	Salt River	Shangri-la	HY	U	7/24/2003								X
1490-89730	:V	Salt River	North Shore 1	HY	U	7/29/2002							X	
1490-89731	:V	Salt River	Shangri-la	N	U	7/27/2003								X
1490-89732	:V	Salt River	Shangri-la	N	U	7/27/2003								X
1490-89740	V:	Salt River	Shangri-la	N	U	7/12/2003								X
1490-89741	:V	Salt River	Shangri-la	N	U	7/12/2003								X
1490-89742	:V	Salt River	Shangri-la	N	U	7/12/2003								X
1490-89747	:V	Salt River	School House North 2	N	U	7/2/2003								X
1490-89748	V:	Salt River	School House South 3	N	U	7/8/2003								X
1490-89749	:V	Salt River	Shangri-la	N	U	7/27/2003								X
1490-89750	:V	Salt River	Shangri-la	N	U	7/27/2003								X
1490-89751	:V	Salt River	Shangri-la	N	U	7/27/2003								X
1490-89764	:V	Salt River	North Shore 1	N	U	6/29/2003								X
1490-89765	V:	Tonto Creek	Tonto Creek Inflow	N	U	6/28/2003								X
1490-89766	V:	Tonto Creek	Tonto Creek Inflow	N	U	6/28/2003								X
1490-89767	V:	Tonto Creek	Tonto Creek Inflow	N	U	6/28/2003								X
1490-89769	:V	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89770	:V	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89771	V:	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89772	V:	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89773	V:	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89774	:V	Salt River	North Shore 1	N	U	6/30/2003								X
1490-89775	V:	Salt River	North Shore 2	N	U	7/15/2003								X
1490-89779	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89780	V:	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89781	V:	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89782	V:	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89783	:V	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89784	:V	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89785	:V	Tonto Creek	Orange Peel Flats	N	U	6/28/2003								X
1490-89786	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89787	V:	Salt River	School House North 2	N	U	6/29/2003								X
1490-89788	V:	Salt River	School House North 2	N	U	6/29/2003								X
1490-89789	V:	Salt River	Shangri-la	HY	U	7/28/2003								X
1490-89790	V:	Salt River	North Shore 1	HY	U	7/15/2003								X
1490-89793	V:YDY	Salt River	North Shore 1	N	F*	8/15/2002							X	X[19]
1490-89794	:V	Salt River	North Shore 1	N	U	6/29/2003								X
1490-89795	:V	Salt River	Lake Shore	HY	U	7/11/2003								X
1490-89801	V:WV	Salt River	Salt River Inflow	AHY	F*	6/15/2001						X		
1490-89802	V:WRW	Salt River	North Shore	AHY	F*	7/14/2001						X		X
1490-89803	V:WDW	Salt River	Shangri-la	AHY	F*	7/1/2001						X		X
1490-89804	RYR:V	Tonto Creek	Orange Peel Flats	AHY	F*	6/30/2001						X		X
1490-89805	V:DWD	Salt River	Lake Shore	SY	U	7/2/2001						X		X[3]
1490-89806	V:VW	Salt River	Lake Shore	AHY	F*	6/18/2001						X	X[21]	
1490-89807	V:	Salt River	School House North 1	N	U	7/2/2003								X
1490-89808	V:	Salt River	Shangri-la	N	U	7/7/2003								X
1490-89809	V:	Salt River	Shangri-la	N	U	7/7/2003								X

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected							
							1996	1997	1998	1999	2000	2001	2002	2003
1490-89810	:V	Salt River	Lake Shore	N	U	7/8/2003								X
1490-89811	:V	Salt River	North Shore 1	N	U	6/15/2003								X
1490-89812	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89813	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89814	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89815	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89816	WK:V	Salt River	Lake Shore	SY	F*	6/28/2001						X	X[3]	X
1490-89817	KG:V	Salt River	North Shore	SY	U	7/26/2001						X		
1490-89818	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89819	V:	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89820	:V	Salt River	North Shore 1	N	U	6/24/2003								X
1490-89825	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89826	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89827	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89828	V:	Salt River	Shangri-la	N	U	7/2/2003								X
1490-89829	V:	Salt River	Shangri-la	N	U	7/2/2003								X
1490-89830	V:	Salt River	Shangri-la	N	U	7/2/2003								X
1490-89831	V:	Salt River	North Shore 1	N	U	7/10/2003								X
1490-89832	V:	Salt River	North Shore 1	N	U	7/10/2003								X
1490-89836	V:	Salt River	Shangri-la	N	U	6/27/2003								X
1490-89837	V:	Salt River	Shangri-la	N	U	6/27/2003								X
1490-89838	V:	Salt River	Shangri-la	N	U	6/27/2003								X
1490-89842	:V	Salt River	North Shore 1	N	U	7/9/2003								X
1490-89843	V:	Salt River	North Shore 1	N	U	7/9/2003								X
1490-89844	V:	Salt River	North Shore 1	N	U	7/9/2003								X
1490-89845	:V	Salt River	Lake Shore	N	U	7/8/2003								X
1490-89846	:V	Salt River	Lake Shore	N	U	7/8/2003								X
1490-89847	:V	Salt River	Lake Shore	N	U	7/3/2003								X
1490-89848	:V	Salt River	Lake Shore	N	U	7/3/2003								X
1490-89849	:V	Salt River	School House South 3	N	U	7/3/2003								X
1490-89850	:V	Salt River	Lake Shore	N	U	7/20/2002							X	
1490-89852	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89853	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89854	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89855	:V	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89856	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89857	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89858	V:	Salt River	North Shore 1	N	U	6/27/2003								X
1490-89860	V:DRD	Salt River	North Shore 1	AHY	F	6/2/2003								X
1490-89861	V:	Tonto Creek	Orange Peel Camp	N	U	6/24/2003								X
1490-89862	V:	Tonto Creek	Orange Peel Camp	N	U	6/24/2003								X
1490-89863	V:	Tonto Creek	Orange Peel Camp	N	U	6/24/2003								X
1490-89875	:V	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89876	:V	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89877	:V	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89878	V:	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89879	V:	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89880	:V	Salt River	Shangri-la	N	U	6/18/2003								X
1490-89881	:V	Salt River	North Shore 1	N	U	6/19/2003								X
1490-89882	:V	Salt River	North Shore 1	N	U	6/19/2003								X
1490-89883	:V	Salt River	North Shore 1	N	U	6/19/2003								X
1490-89884	:V	Salt River	North Shore 1	N	U	6/19/2003								X
1490-89885	:V	Salt River	North Shore 1	N	U	6/19/2003								X

1490-89886	:V	Salt River	North Shore 1	N	U	6/19/2003								X
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1490-89887	:V	Salt River	North Shore 1	N	U	6/19/2003								X
1490-89888	V:	Salt River	North Shore 1	N	U	6/26/2003								X
1490-89889	V:	Salt River	North Shore 1	N	U	6/26/2003								X
1490-89890	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89891	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89892	V:	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89893	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89894	V:	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89895	V:	Salt River	Shangri-la	N	U	6/21/2003								X
1490-89896	:V	Salt River	School House South 3	N	U	7/1/2003								X
1490-89897	:V	Salt River	School House North 1	N	U	7/1/2003								X
1490-89898	:V	Salt River	School House North 1	N	U	7/1/2003								X
1490-89899	:V	Salt River	School House North 1	N	U	7/1/2003								X
1490-89900	V:	Salt River	School House North 1	N	U	7/2/2003								X
1490-89901	YO:Z	Salt River	Salt River Inflow	AHY	F*	6/15/2001						X	X	
1490-89902	KO:Z	Tonto Creek	A+ Cross Road	AHY	F*	6/16/2001						X		
1490-89903	Z:DWD	Salt River	Lake Shore	AHY	F*	6/18/2001						X		
1490-89906	Z:VW	Salt River	Lake Shore	AHY	U	5/5/2001						X		
1490-89907	Federal Bird Band Number Changed to 2290-24308													
1490-89908	Z:YO	Tonto Creek	Orange Peel Flats	AHY	U	5/20/2001						X	X	X
1490-89909	YK:Z	Salt River	Shangri-la	AHY	U	5/30/2001						X		
1490-89910	Federal Bird Band Number Changed to 2290-24310													
1490-89911	GO:Z	Tonto Creek	A+ Cross Road	AHY	F*	6/12/2001						X		
1490-89912	Z:YDY	Tonto Creek	A+ Cross Road	AHY	U	6/12/2001						X		
1490-89913	Z:KGK	Salt River	Shangri-la	SY	M*	6/27/2001						X		X[10]
1490-89914	VWV:Z	Salt River	Lake Shore	AHY	U	6/28/2001						X		
1490-89921	OG:Z	Salt River	Shangri-la	SY	U	6/29/2001						X	X[4]	X
1490-89929	OY:Z	Salt River	Mudflats	SY	U	6/15/2001						X		
1490-89930	Z:KO	Tonto Creek	Orange Peel Camp	AHY	U	6/18/2001						X		
1490-89931	GKG:Z	Salt River	Shangri-la	N	U	6/19/2001						X	X[9]	
1490-89932	Z:	Salt River	Shangri-la	N	U	6/19/2001						X		
1490-89933	RGR:Z	Salt River	Shangri-la	N	U	6/19/2001						X	X[10]	
1490-89934	Z:KYK	Tonto Creek	Orange Peel Camp	SY	F*	6/26/2001						X	X	X[10]
1490-89935	Z:WKW	Tonto Creek	Orange Peel Camp	AHY	U	6/26/2001						X		
1490-89936	RYR:Z	Tonto Creek	Orange Peel Camp	AHY	U	6/26/2001						X	X[2]	X[11]
1490-89939	Z:	Salt River	Shangri-la	N	U	6/25/2001						X		
1490-89940	:Z	Salt River	Shangri-la	N	U	6/25/2001						X		
1490-89941	Z:DO	Salt River	Shangri-la	N	U	6/25/2001						X	X[10]	
1490-89942	:Z	Salt River	Shangri-la	N	U	6/25/2001						X		
1490-89943	RDR:Z	Salt River	Lake Shore	AHY	F*	7/10/2001						X	X	
1490-89944	OW:Z	Salt River	Shangri-la	SY	F*	7/11/2001						X	X	
1490-89945	YRY:Z	Salt River	Lake Shore	AHY	F*	7/12/2001						X		
1490-89949	DWD:Z	Salt River	Shangri-la	N	U	6/20/2001						X	X[9]	
1490-89950	Z:OK	Salt River	Shangri-la	N	F*	6/20/2001						X		X[10]
1490-89951	Z:GKG	Salt River	Shangri-la	N	U	6/20/2001						X	X[10]	
1490-89953	:Z	Salt River	Shangri-la	N	U	6/20/2001						X		
1490-89954	YKY:Z	Salt River	Shangri-la	N	U	6/20/2001						X		X[8]
1490-89955	:Z	Salt River	Shangri-la	N	U	6/20/2001						X		
1490-89956	:Z	Salt River	Shangri-la	N	U	6/20/2001						X		
1490-89957	:Z	Salt River	Shangri-la	N	U	6/20/2001						X		
1490-89959	Z:WVW	Salt River	Shangri-la	N	U	6/18/2001						X	X[9]	
1490-89962	RZ:Z	Salt River	Shangri-la	N	M*	6/18/2001						X	X[10]	X

1490-89964	Z:DRD	Salt River	North Shore	SY	F*	7/14/2001						X	X[9]	
1490-89966	RWR:Z	Salt River	Shangri-la	N	U	6/18/2001						X	X[10]	
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1490-89968	Z:DK	Tonto Creek	Orange Peel Flats	AHY	M*	6/30/2001						X		
1490-89969	Z:	Salt River	Shangri-la	N	U	6/18/2001						X		
1490-89970	Z:	Salt River	Shangri-la	N	U	6/18/2001						X		
1490-89971	Z:	Salt River	Shangri-la	N	U	6/18/2001						X		
1590-97202	KR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	5/13/1997		X	X	X	X	X	X	X[11]
1590-97203	UW/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	5/15/1997		X						
1590-97213	X:Y/WR	Salt River	Salt River Inflow	AHY	F	5/31/1997		X						
1590-97214	X:D/WR	Salt River	Salt River Inflow	AHY	M	6/1/1997		X						
1590-97215	X:P/WR	Salt River	Salt River Inflow	AHY	M	6/1/1997		X						
1590-97216	L/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/2/1997		X	X					
1590-97217	Y/WR:X	Salt River	Salt River Inflow	AHY	M	6/3/1997		X						
1590-97218	X:O/WR	Salt River	Salt River Inflow	AHY	M	6/3/1997		X	X					
1590-97219	X:DP/WR	Salt River	Salt River Inflow	AHY	F	6/3/1997		X	X					
1590-97236	R:X	Salt River	Salt River Inflow	N	F	6/23/1997		X						
1590-97237	R:X	Salt River	Salt River Inflow	N	M	6/23/1997		X						
1590-97249	P/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/29/1997		X						
1590-97250	X:R	Salt River	Salt River Inflow	N	F	6/30/1997		X						
1590-97251	X:R	Salt River	Salt River Inflow	N	F	6/30/1997		X						
1590-97252	X:R	Salt River	Salt River Inflow	N	M	6/30/1997		X						
1590-97253	X:PD/R	Salt River	Salt River Inflow	AHY	F	6/30/1997		X	X					
1590-97254	RW/R:X	Salt River	Salt River Inflow	AHY	M	7/1/1997		X						
1590-97263	PD/R:X	Salt River	Salt River Inflow	AHY	F	7/24/1997		X	X	X	X			
1590-97264	X:WU/R	Salt River	Salt River Inflow	AHY	M	7/24/1997		X						
1590-97268	X:R	Salt River	Salt River Inflow	N	F	8/7/1997		X						
1590-97269	X:R	Salt River	Salt River Inflow	N	U	8/7/1997		X						
1590-97304	G/RW:X	Salt River	Salt River Inflow	AHY	M	5/14/1997		X	X	X[5]	X	X		
1590-97311	W/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	5/31/1997		X	X	X				
1590-97312	O/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	5/31/1997		X						
1590-97313	P/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	5/31/1997		X	X	X	X	X		
1590-97314	KW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	6/1/1997		X	X					
1590-97315	X:W/RW	Salt River	Salt River Inflow	AHY	M	6/2/1997		X						
1590-97316	D/RW:X	Salt River	Salt River Inflow	AHY	M	6/2/1997		X	X					
1590-97317	X:G/RW	Salt River	Salt River Inflow	AHY	F	6/2/1997		X						
1590-97318	X:W/PD	Salt River	Salt River Inflow	AHY	F	6/2/1997		X	X	X	X[3]	X		X
1590-97319	X:O/PD	Salt River	Salt River Inflow	AHY	M	6/2/1997		X	X	X				
1590-97320	X:Y/PD	Tonto Creek	Tonto Creek Inflow	AHY	M	6/3/1997		X	X					
1590-97321	X:L/RW	Tonto Creek	Tonto Creek Inflow	AHY	M	6/3/1997		X						
1590-97325	Federal Bird Band Number Changed to 2290-24257													
1590-97351	X:K/RW	Salt River	Salt River Inflow	AHY	M	6/28/1997		X	X					
1590-97352	W/PD:X	Salt River	Salt River Inflow	AHY	F	6/28/1997		X						
1590-97359	UW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	7/1/1997		X						
1590-97360	DP/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	7/1/1997		X	X	X				
1590-97373	VG:X	Salt River	Salt River Inflow	AHY	F	7/14/1997		X	X	X[6]	X[5]	X[7]		
1590-97374	X:PD/RW	Salt River	Salt River Inflow	AHY	M	7/14/1997		X						
1590-97375	WU/RW:X	Salt River	Salt River Inflow	AHY	F	7/14/1997		X						
1590-97501	V:GW	Salt River	Salt River Inflow	AHY	F	6/18/1998			X					
1590-97502	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/21/1998			X					
1590-97503	GY:V	Tonto Creek	Tonto Creek Inflow	N	M	7/21/1998			X	X[3]	X[18]			
1590-97506	V:	Salt River	Salt River Inflow	N	F	6/28/1999				X				
1590-97507	V:YKY	Salt River	Shangri-la	N	F	6/28/1999				X	X[4]			
1590-97508	V:	Salt River	Salt River Inflow	N	F	6/28/1999				X				

1590-97509	:V	Tonto Creek	Tonto Creek Inflow	N	F	6/28/1999				X				
1590-97511	KR:V	Tonto Creek	Tonto Creek Inflow	N	F	6/28/1999				X	X [13]	X [9]		
1590-97512	:V	Tonto Creek	Tonto Creek Inflow	N	U	6/28/1999				X				
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1590-97513	YK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	5/13/1998			X	X	X			
1590-97514	V:YK	Salt River	Salt River Inflow	AHY	M	5/24/1998			X	X [6]				
1590-97515	V:RG	Salt River	Salt River Inflow	AHY	M	6/3/1998			X					
1590-97516	V:KK	Salt River	Salt River Inflow	AHY	M	6/7/1998			X	X [4]	X	X	X	
1590-97517	V:KY	Salt River	Salt River Inflow	AHY	F	6/7/1998			X	X [3]				
1590-97518	V:GR	Salt River	Salt River Inflow	AHY	M	6/7/1998			X		X			
1590-97519	KY:V	Tonto Creek	Tonto Creek Inflow	AHY	M*	6/8/1998			X					
1590-97520	KK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	6/16/1998			X					
1590-97521	GR:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/17/1998			X					
1590-97522	WY:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/17/1998			X	X	X			
1590-97523	YG:V	Tonto Creek	Tonto Creek Inflow	AHY	M	6/17/1998			X					
1590-97524	YW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	7/1/1998			X	X	X [4]	X		X
1590-97525	RW:V	Tonto Creek	Tonto Creek Inflow	AHY	U	6/8/1998			X		X			
1590-97526	DK:V	Tonto Creek	Tonto Creek Inflow	AHY	U	6/8/1998			X					
1590-97527	WW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/9/1998			X			X [9]		X[2]
1590-97528	DW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/17/1998			X					
1590-97529	V:RW	Salt River	Salt River Inflow	AHY	M	6/18/1998			X					
1590-97530	V:DW	Salt River	Salt River Inflow	SY	M	6/18/1998			X	X				
1590-97531	V:WW	Salt River	Salt River Inflow	AHY	F	6/19/1998			X		X	X		
1590-97537	V:RR	Salt River	Salt River Inflow	AHY	U	6/7/1998			X		X [3]	X	X	
1590-97538	V:YY	Salt River	Salt River Inflow	AHY	M	6/7/1998			X					
1590-97539	YR:V	Salt River	Salt River Inflow	AHY	F	6/19/1998			X					
1590-97540	V:RY	Salt River	Salt River Inflow	AHY	F	6/30/1998			X	X [5]	X [3]	X	X	X
1590-97541	:V	Tonto Creek	Tonto Creek Inflow	N	M	7/27/1998			X					
1590-97542	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/27/1998			X					
1590-97543	V:WG	Salt River	Shangri-la	AHY	U	6/22/1999				X	X [4]	X [3]	X	X
1590-97544	V:RD	Salt River	Shangri-la	AHY	M	6/22/1999				X	X	X	X	X
1590-97545	V:	Salt River	Salt River Inflow	N	F	7/4/1999				X				
1590-97547	V:	Salt River	Salt River Inflow	N	F	7/4/1999				X				
1590-97548	:V	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1590-97549	VK:V	Tonto Creek	Tonto Creek Inflow	AHY	M	5/14/1999				X				
1590-97550	RD:V	Tonto Creek	Tonto Creek Inflow	AHY	M	5/14/1999				X				
1710-20202	Z:VWV	Tonto Creek	A+ Cross Road	AHY	U	5/21/2001						X	X	
1710-20203	Z:RO	Salt River	Shangri-la	AHY	U	5/22/2001						X		X
1710-20204	Z:OD	Salt River	Salt River Inflow	AHY	F*	5/30/2001						X		
1710-20205	WVW:Z	Salt River	Lake Shore	AHY	U	5/31/2001						X		
1710-20207	RY:Z	Salt River	Shangri-la	AHY	U	6/5/2001						X		
1710-20208	Z:WY	Tonto Creek	Tonto Creek Inflow	AHY	F*	6/6/2001						X	X	
1710-20209	Z:WRW	Salt River	Lake Shore	AHY	U	6/2/2001						X		
1710-20210	Z:RDR	Salt River	Shangri-la	AHY	F*	6/13/2001						X		
1710-20211	RKR:Z	Salt River	School House North 1	SY	F*	6/14/2001						X		
1710-20219	DO:Z	Salt River	Shangri-la	AHY	U	5/17/2001						X	X	X[6]
1710-20220	VV:Z	Salt River	Mudflats	AHY	F*	6/3/2001						X		X
1710-20221	GY:Z	Tonto Creek	A+ Cross Road	AHY	U	6/12/2001						X		
1710-20222	Federal Bird Band Number Changed to 2210-57307													
1710-20223	Z:WG	Salt River	School House South 3	AHY	U	6/16/2001						X		
1710-20224	:Z	Salt River	Shangri-la	N	U	6/25/2001						X		
1710-20225	KYK:Z	Salt River	Shangri-la	N	U	6/25/2001						X	X[9]	X[8]
1710-20226	Z:RK	Salt River	Shangri-la	N	M*	6/25/2001						X		X[10]
1710-20229	Z:	Salt River	Shangri-la	N	U	6/25/2001						X		

1710-20230	Federal Bird band Number Changed to 2290-24304													
1710-20231	:Z	Salt River	Shangri-la	N	U	6/25/2001						X		
1710-20232	:Z	Salt River	Shangri-la	N	U	6/25/2001						X		
1710-20233	DD:Z	Salt River	Shangri-la	N	U	6/25/2001						X		X[8]
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1710-20239	Z:GO	Salt River	School House South 3	AHY	U	5/5/2001						X	X	X
1710-20240	KG:Z	Salt River	Mudflats	AHY	U	5/22/2001						X	X[3]	X[4]
1710-20241	KY:Z	Salt River	Shangri-la	AHY	F*	6/3/2001						X		X
1710-20242	YG:Z	Salt River	School House North 1	AHY	F*	6/4/2001						X	X	
1710-20243	OD:Z	Salt River	Shangri-la	AHY	F*	6/5/2001						X	X	X
1710-20244	Z:RWR	Tonto Creek	Orange Peel Camp	AHY	M*	6/6/2001						X		
1710-20245	OKO:Z	Salt River	Shangri-la	N	U	6/16/2001						X		X[7]
1710-20246	:Z	Salt River	Shangri-la	N	U	6/16/2001						X		
1710-20247	:Z	Salt River	Shangri-la	N	U	6/16/2001						X		
1710-20248	Z:RZR	Salt River	Lake Shore	N	U	6/16/2001						X	X[19]	
1710-20249	:Z	Salt River	Lake Shore	N	U	6/16/2001						X		
1710-20250	:Z	Salt River	Shangri-la	N	U	6/18/2001						X		
1710-20251	V:WK	Salt River	Salt River Inflow	AHY	M	6/15/1999				X				
1710-20252	V:WY	Salt River	Salt River Inflow	SY	F	6/15/1999				X				
1710-20253	V:KO	Salt River	Salt River Inflow	SY	M	6/15/1999				X				
1710-20254	V:GO	Salt River	Salt River Inflow	AHY	M	6/15/1999				X				
1710-20255	V:OK	Salt River	Mudflats	AHY	M	7/23/1999				X				
1710-20256	V:KW	Salt River	Mudflats	AHY	F	6/23/1999				X	X	X		
1710-20257	V:GK	Salt River	Mudflats	SY	M	6/23/1999				X				
1710-20258	V:OY	Salt River	Mudflats	SY	F	6/23/1999				X	X			
1710-20261	VG:V	Tonto Creek	Tonto Creek Inflow	AHY	M	6/5/1999				X				
1710-20262	V:GY	Tonto Creek	Tonto Creek Inflow	AHY	M	6/5/1999				X				
1710-20263	GW:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/6/1999				X	X[9]	X	X	X
1710-20264	OO:V	Salt River	Shangri-la	AHY	F*	6/3/2001						X	X	X
1710-20265	KW:V	Salt River	North Shore	SY	F*	6/30/2001						X		
1710-20266	DR:V	Salt River	North Shore	SY	U	6/30/2001						X		
1710-20267	DY:V	Salt River	North Shore	SY	U	7/2/2001						X	X[3]	
1710-20268	GV:V	Salt River	Mudflats	SY	F*	7/11/2001						X		
1710-20270	:V	Salt River	Salt River Inflow	N	U	6/27/2003								X
1710-20271	V:VWV	Tonto Creek	Orange Peel Camp	AHY	F*	6/26/2001						X		
1710-20273	V:KR	Salt River	Shangri-la	AHY	F	6/22/1999				X	X	X		
1710-20274	V:GV	Salt River	Shangri-la	AHY	M	6/22/1999				X		X		
1710-20275	V:OO	Salt River	Shangri-la	AHY	M	6/22/1999				X	X	X[9]	X	X[7]
1710-20276	GG:V	Tonto Creek	Tonto Creek Inflow	AHY	M*	6/4/1999				X				
1710-20277	WG:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/6/1999				X	X	X		
1710-20278	GK:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/14/1999				X				
1710-20279	V:VG	Salt River	Shangri-La	AHY	M	6/18/1999				X				
1710-20280	V:KD	Salt River	Mudflats	AHY	M	6/23/1999				X	X[3]	X	X	X
1710-20281	V:GG	Salt River	Mudflats	AHY	M	6/23/1999				X	X	X	X	X[10]
1710-20282	V:YO	Salt River	Mudflats	AHY	F	6/23/1999				X	X[3]	X		X
1710-20283	WR:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/14/1999				X	X	X[6]		
1710-20284	RY:V	Tonto Creek	Tonto Creek Inflow	AHY	M	5/14/1999				X				
1710-20285	V:YR	Salt River	Salt River Inflow	AHY	M	5/13/1999				X	X	X	X[3]	
1710-20287	V:	Salt River	Salt River Inflow	N	F	6/30/1999				X				
1710-20288	V:RYR	Salt River	Salt River Inflow	N	M	6/30/1999				X		X[9]	X	X[10]
1710-20289	V:	Salt River	Salt River Inflow	N	F	6/30/1999				X				
1710-20290	V:	Salt River	Salt River Inflow	N	F	6/30/1999				X				
1710-20291	V:	Salt River	Salt River Inflow	N	M	6/30/1999				X				
1710-20293	V:VK	Salt River	Mudflats	AHY	F	6/23/1999				X				

1710-20294	GO:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/29/1999				X				
1710-20295	:V	Salt River	Salt River Inflow	N	F	7/9/1999				X				
1710-20296	OW:V	Tonto Creek	Tonto Creek Inflow	AHY	M	6/29/1999				X				
1710-20297	:V	Salt River	Salt River Inflow	N	F	7/9/1999				X				
1710-20298	YKY:V	Tonto Creek	Tonto Creek Inflow	N	M	7/19/1999				X		X [1]	X	X
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1710-20299	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/19/1999				X				
1710-20300	V:	Salt River	Salt River Inflow	N	M	7/19/1999				X				
1710-20301	V:VY	Salt River	Salt River Inflow	SY	F	7/14/1999				X				
1710-20302	V:DR	Salt River	Salt River Inflow	SY	M	7/14/1999				X	X [3]	X		
1710-20303	V:WD	Salt River	Salt River Inflow	SY	F	7/14/1999				X				
1710-20304	:V	Salt River	Salt River Inflow	N	U	6/14/1999				X				
1710-20305	V:DO	Salt River	Shangri-la	AHY	M	7/24/1999				X	X			X
1710-20306	V:KGK	Salt River	Shangri-la	N	M	7/24/1999				X	X[9]			
1710-20307	KO:V	Salt River	Salt River Inflow	AHY	M	7/25/1999				X				
1710-20308	WO:V	Salt River	Shangri-la	AHY	F	7/26/1999				X	X	X	X	X
1710-20309	RK:V	Salt River	Shangri-la	AHY	F	7/27/1999				X				
1710-20310	OK:V	Salt River	Shangri-la	AHY	F	7/27/1999				X				
1710-20311	:V	Salt River	Salt River Inflow	N	U	6/27/2003								X
1710-20312	:V	Salt River	Shangri-la	N	U	6/27/2003								X
1710-20313	:V	Salt River	Shangri-la	N	U	6/27/2003								X
1710-20314	V:	Salt River	School House North 2	N	U	6/30/2003								X
1710-20315	V:	Salt River	School House North 2	N	U	6/30/2003								X
1710-20316	WV:V	Tonto Creek	A+ Cross Road	AHY	U	6/12/2001						X		
1710-20317	OD:V	Salt River	Lake Shore	SY	U	7/24/2001						X	X	X
1710-20318	:V	Salt River	School House North 2	N	U	7/2/2003								X
1710-20319	:V	Salt River	School House North 2	N	U	7/2/2003								X
1710-20320	V:RK	Salt River	North Shore	SY	M*	7/14/2001						X		
1710-20321	V:KRK	Salt River	Lake Shore	SY	F*	7/18/2001						X		
1710-20322	V:RDR	Salt River	Lake Shore	SY	M*	7/30/2001						X	X	
1710-20323	:V	Salt River	Mudflats	N	F	6/24/2000					X			
1710-20324	:V	Salt River	Shangri-la	N	M	6/24/2000					X			
1710-20325	DYD:V	Salt River	Shangri-la	N	F	6/24/2000					X	X[7]		X
1710-20326	V:	Salt River	Shangri-la	N	F	6/24/2000					X			
1710-20327	V:	Salt River	Shangri-la	N	F	6/24/2000					X			
1710-20328	:V	Salt River	Shangri-la	N	F	6/24/2000					X			
1710-20329	RR:V	Tonto Creek	Orange Peel Camp	AHY	F*	6/2/2001						X		
1710-20330	VY:V	Tonto Creek	Orange Peel Camp	AHY	U	6/2/2001						X		
1710-20331	V:YW	Salt River	Salt River Inflow	AHY	F	7/2/1998			X					
1710-20332	RG:V	Tonto Creek	Tonto Creek Inflow	AHY	F	7/23/1998			X	X				
1710-20333	OY:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/26/1999				X				
1710-20334	YV:V	Tonto Creek	Tonto Creek Inflow	AHY	F	6/26/1999				X	X	X		
1710-20335	V:KG	Salt River	Shangri-la	AHY	F	6/27/1999				X	X			
1710-20336	V:OR	Salt River	Shangri-la	AHY	M*	6/27/1999				X				
1710-20337	WD:V	Salt River	Shangri-la	AHY	F	6/27/1999				X	X			
1710-20338	YD:V	Salt River	Shangri-la	AHY	M	6/27/1999				X	X	X	X	
1710-20339	V:OG	Salt River	Shangri-la	SY	M	6/18/1999				X	X [9]	X	X	X
1710-20340	V:OW	Salt River	Shangri-la	AHY	F	6/22/1999				X	X	X	X	
1710-20341	V:VV	Salt River	Shangri-la	AHY	F	6/22/1999				X	X			
1710-20342	V:DY	Salt River	Shangri-la	AHY	M	6/22/1999				X				
1710-20343	V:WR	Salt River	Shangri-la	AHY	F	6/22/1999				X				
1710-20344	V:WO	Salt River	Shangri-la	AHY	M	6/27/1999				X				
1710-20345	V:YG	Salt River	Shangri-la	AHY	F	6/27/1999				X	X[9]			
1710-20346	V:RO	Salt River	Shangri-la	SY	F	6/27/1999				X				

1710-20347	V:YD	Salt River	Shangri-la	AHY	M	6/27/1999				X	X	X	X	X
1710-20348	V:OD	Salt River	Shangri-la	SY	M	6/27/1999				X	X			
1710-20385	YRY:D	San Pedro River	Kearny Sewage Ponds	N	M	7/9/1999				X		X [7]	X[8]	X
1710-20456	WRW:Z	Salt River	Shangri-la	AHY	F*	5/30/2001						X		X
1710-20457	YDY:Z	Salt River	Salt River Inflow	AHY	M*	6/17/2001						X		
1710-20458	Z:OG	Salt River	Lake Shore	AHY	U	5/5/2001						X	X	
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1710-20459	Z:OW	Salt River	Salt River Inflow	AHY	U	5/22/2001						X		
1710-20460	Z:WDW	Tonto Creek	Tonto Creek Inflow	AHY	U	5/31/2001						X		
1710-20461	VYV:Z	Salt River	Shangri-la	AHY	U	6/1/2001						X	X	X
1710-20462	DY:Z	Salt River	Lake Shore	AHY	U	6/2/2001						X	X[7]	X
1710-20463	Z:KV	Salt River	Lake Shore	SY	U	6/2/2001						X		
1710-20464	Z:KY	Salt River	Lake Shore	SY	U	6/12/2001						X	X[6]	
1710-20465	DYD:Z	Tonto Creek	Orange Peel Flats	AHY	U	6/14/2001						X		
1710-20466	Z:YKY	Tonto Creek	Orange Peel Flats	AHY	U	6/14/2001						X		
1710-20473	KW:Z	San Pedro River	Aravaipa	AHY	M*	7/16/1998			X	X [1]	X	X	X	X[3]
1710-20497	Z:YW	Salt River	Shangri-la	AHY	U	5/4/2001						X	X	X[3]
1710-20498	Z:WV	Salt River	Old Salt	AHY	U	5/17/2001						X		X[1]
1710-20499	WO:Z	Salt River	Salt River Inflow	AHY	U	5/17/2001						X		
1710-20500	WG:Z	Salt River	Shangri-la	AHY	F*	5/18/2001						X	X[11]	X[6]
1710-20553	V:	Salt River	Salt River Inflow	N	F	7/19/1999				X				
1710-20554	V:	Salt River	Salt River Inflow	N	F	7/19/1999				X				
1710-20555	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/20/1999				X				
1710-20556	:V	Tonto Creek	Tonto Creek Inflow	N	M	7/20/1999				X				
1710-20557	V:DK	Salt River	Shangri-la	AHY	F	7/23/1999				X	X [2]			
1710-20558	V:	Salt River	Salt River Inflow	N	F	7/24/1999				X				
1710-20559	V:	Salt River	Salt River Inflow	N	M	7/24/1999				X				
1710-20560	V:KV	Salt River	Shangri-la	AHY	F	7/25/1999				X				
1710-20561	DO:V	Salt River	Shangri-la	N	F	7/28/1999				X	X [12]	X	X	X
1710-20562	V:	Salt River	Salt River Inflow	N	F	7/28/1999				X				
1710-20563	V:	Salt River	Salt River Inflow	N	F	7/28/1999				X				
1710-20564	OR:V	Salt River	Salt River Inflow	SY	F	7/28/1999				X				
1710-20565	YY:V	Salt River	Salt River Inflow	AHY	M*	7/28/1999				X				
1710-20566	KV:V	Salt River	Shangri-la	AHY	F	7/29/1999				X				
1710-20567	YO:V	Salt River	Shangri-la	AHY	M	7/29/1999				X	X [2]	X [5]	X[7]	X
1710-20568	KD:V	Salt River	Shangri-la	AHY	M	7/29/1999				X				
1710-20569	:V	Salt River	Salt River Inflow	N	M	7/29/1999				X				
1710-20570	DWD:V	Salt River	Salt River Inflow	N	M	7/29/1999				X		X [2]		
1710-20571	:V	Salt River	Salt River Inflow	N	M	7/29/1999				X				
1710-20572	V:	Salt River	Salt River Inflow	N	F	8/10/1999				X				
1710-20573	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/7/1999				X				
1710-20574	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/7/1999				X				
1710-20575	:V	Tonto Creek	Tonto Creek Inflow	N	F	7/7/1999				X				
1710-20576	V:	Salt River	Salt River Inflow	N	M	7/7/1999				X				
1710-20577	V:	Salt River	Salt River Inflow	N	M	7/7/1999				X				
1710-20578	Federal Bird Band Number Changed to 2290-24306													
1710-20579	:V	Salt River	Salt River Inflow	N	F	8/10/1999				X				
1710-20580	V:	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1710-20581	V:	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1710-20582	V:	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1710-20588	:V	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1710-20589	OKO:V	Salt River	Salt River Inflow	N	F	8/10/1999				X			X	
1710-20590	:V	Salt River	Salt River Inflow	N	F	8/10/1999				X				
1710-20591	V:	Salt River	Salt River Inflow	N	F	8/10/1999				X				

1710-20592	:V	Salt River	Salt River Inflow	N	M	8/10/1999				X				
1710-20593	K:WD	Salt River	Shangri-la	AHY	M	6/6/2000					X			
1710-20594	K:KG	Salt River	Shangri-la	AHY	F	6/15/2000					X			
1710-20595	K:DK	Salt River	Shangri-la	AHY	M	5/17/2000					X	X	X	X
1710-20596	YV:K	Tonto Creek	Tonto Creek Inflow	AHY	M	5/18/2000					X			
1710-20597	K:YV	Salt River	Shangri-la	AHY	M	5/20/2000					X	X		
1710-20598	VY:K	Salt River	School House South	AHY	M	6/19/2000					X			
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1710-20599	K:KY	Salt River	Shangri-la	AHY	M*	5/9/2000					X	X		
1710-20600	K:GY	Salt River	Shangri-la	AHY	M	5/9/2000					X	X	X	
1710-20601	K:GR	Salt River	Mudflats	AHY	M	5/17/2000					X	X [1]		
1710-20602	GR:K	Tonto Creek	Tonto Creek Inflow	AHY	M	5/18/2000					X			
1710-20603	K:VG	Salt River	Shangri-la	AHY	F	5/22/2000					X	X	X	
1710-20604	K:KV	Salt River	Lake Shore	AHY	M	6/30/2000					X	X	X	X[10]
1710-20605	KGK:K	Salt River	Lake Shore	AHY	M	6/30/2000					X	X [3]		
1710-20606	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1710-20609	WR:K	Salt River	Shangri-la	AHY	M	6/15/2000					X	X		
1710-20610	:K	Salt River	Shangri-la	N	M	6/16/2000					X			
1710-20611	GV:K	Salt River	Salt River Inflow	AHY	F	6/16/2000					X	X [3]	X	
1710-20612	VG:K	Tonto Creek	Orange Peel	AHY	F*	6/18/2000					X			
1710-20613	Federal Bird Band Number Changed to 2290-24302													
1710-20614	K:RR	Salt River	School House South 3	AHY	F	6/19/2000					X	X		
1710-20615	K:GG	Salt River	School House South 3	AHY	M	6/19/2000					X			
1710-20616	K:YY	Salt River	School House South 3	AHY	F	6/19/2000					X		X [3]	X
1710-20617	K:	Salt River	Shangri-la	N	U	6/21/2000					X			
1710-20618	Federal Bird Band Number Changed to 2290-24202													
1710-20619	K:	Salt River	Shangri-la	N	U	6/21/2000					X			
1710-20620	:K	Salt River	Mudflats	N	M	6/29/2000					X			
1710-20621	:K	Salt River	Mudflats	N	F	6/29/2000					X			
1710-20622	K:DO	Salt River	Shangri-la	N	F	6/29/2000					X	X [11]	X[9]	
1710-20623	K:	Salt River	Shangri-la	N	M	6/29/2000					X			
1710-20624	:K	Salt River	Shangri-la	N	F	6/29/2000					X			
1710-20625	OW:K	Salt River	Shangri-la	N	M	6/29/2000					X	X [4]		
1710-20626	RO:K	Tonto Creek	Orange Peel Flats	AHY	U	7/2/2000					X	X [9]		
1710-20627	OO:K	Tonto Creek	Orange Peel Camp	AHY	U	7/2/2000					X			
1710-20628	K:GO	Tonto Creek	A+ Cross Road	AHY	M	7/3/2000					X			
1710-20630	VV:X	White Mountains	Greer Town	AHY	M*	7/15/1998			X	X	X	X [3]		
1710-20639	X:	Tonto Creek	Alamo Lake	AHY	M	6/23/1998			X					
1710-20640	:X	Tonto Creek	Alamo Lake	AHY	F	6/23/1998			X					
1710-20671	K:WY	Tonto Creek	Tonto Creek Inflow	AHY	M	5/18/2000					X	X	X	X
1710-20678	K:YW	Tonto Creek	Tonto Creek Inflow	AHY	F	5/31/2000					X	X		
1710-20679	RW:K	Salt River	Mudflats	SY	M	6/1/2000					X			
1710-20680	YW:K	Salt River	Salt River Inflow	AHY	M*	6/2/2000					X			
1710-20681	K:RW	Salt River	Salt River Inflow	AHY	F	6/2/2000					X	X [11]	X	X[2]
1710-20682	WK:K	Salt River	Salt River Inflow	AHY	M	6/2/2000					X	X	X	
1710-20686	Federal Bird Band Number Changed to 2290-24314													
1710-20687	KR:K	Salt River	Shangri-la	AHY	F	6/6/2000					X	X		
1710-20688	RK:K	Salt River	Lake Shore	AHY	U	6/13/2000					X	X [7]	X [9]	
1710-20689	GO:K	Salt River	Lake Shore	AHY	F	6/30/2000					X	X [6]	X	
1710-20690	K:VW	Salt River	Lake Shore	AHY	F	6/30/2000					X			
1710-20691	RR:K	Salt River	Shangri-la	AHY	M	6/15/2000					X	X [7]		
1710-20692	K:GV	Salt River	Shangri-la	AHY	F*	6/15/2000					X	X [5]		
1710-20693	K:WK	Salt River	Salt River Inflow	AHY	M	6/16/2000					X			
1710-20694	GG:K	Salt River	Salt River Inflow	AHY	F*	6/16/2000					X	X [2]		

1710-20695	KW:K	Tonto Creek	Orange Peel Camp	AHY	M*	6/18/2000					X			
1710-20696	K:RG	Tonto Creek	Tonto Creek Inflow	AHY	F*	6/18/2000					X	X[11]	X	X
1710-20697	YK:K	Salt River	Lake Shore	AHY	M	6/19/2000					X			
1710-20698	YY:K	Salt River	Lake Shore	AHY	F	6/19/2000					X	X	X	X
1710-20699	K:WR	Salt River	Lake Shore	AHY	M	6/19/2000					X	X		X[10]
1710-20700	Federal Bird Band Number Changed to 2290-24312													
1710-46318	XDX:	Salt River	Shangri-la	AHY	U	7/14/1999				X				
1710-46319	K:YG	Tonto Creek	Tonto Creek Inflow	AHY	M*	5/10/2000					X	X		
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1710-46320	K:WG	Tonto Creek	Tonto Creek Inflow	SY	M*	5/10/2000					X	X	X[3]	
1710-46321	K:GW	Salt River	Shangri-la	AHY	M*	5/11/2000					X	X[6]	X[8]	
1710-46322	KY:K	Salt River	Shangri-la	AHY	M*	5/11/2000					X			
1710-46323	GY:K	Salt River	Shangri-la	AHY	M*	5/12/2000					X	X	X	
1710-46324	YG:K	Salt River	Shangri-la	AHY	M*	5/12/2000					X	X	X	
1710-46325	WG:K	Salt River	Lake Shore	AHY	F	6/13/2000					X	X	X	X[10]
1710-46326	K:KR	Salt River	Lake Shore	AHY	M	6/13/2000					X			
1710-46327	K:DY	Salt River	Lake Shore	SY	M	6/13/2000					X	X[3]	X	X
1710-46328	GW:K	Salt River	Lake Shore	AHY	M	6/13/2000					X			
1710-46329	WY:K	Salt River	Lake Shore	AHY	F	6/13/2000					X			
1710-46330	YD:K	Salt River	Lake Shore	SY	F	6/13/2000					X	X	X	X
1740-51625	:V	Salt River	Shangri-la	N	U	7/25/2003								X
1740-51626	:V	Salt River	Shangri-la	N	U	7/25/2003								X
1740-51632	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1740-51633	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1740-51634	:V	Salt River	Shangri-la	N	U	6/21/2003								X
1740-51635	V:	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51636	V:	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51637	V:	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51638	:V	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51639	:V	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51640	:V	Salt River	North Shore 1	N	U	6/21/2003								X
1740-51644	X:DR	Salt River	School House South 3	AHY	F*	6/28/2002							X	
1740-51702	X:KO	Salt River	School House South 3	AHY	U	6/16/2002							X	
1740-51713	VG:X	Salt River	Lake Shore	AHY	F*	5/21/2002							X	X[15]
1740-51714	X:WO	Salt River	Lake Shore	AHY	U	6/12/2002							X	X
1740-51715	WV:X	Salt River	Lake Shore	SY	U	6/18/2002							X	X[3]
1740-51716	X:RKR	Salt River	Lake Shore	AHY	F*	6/27/2002							X	X[10]
1740-51717	X:VYV	Salt River	Lake Shore	AHY	F*	6/27/2002							X	
1740-51718	X:KYK	Salt River	Lake Shore	AHY	M*	7/14/2002							X	
1740-51719	Federal Bird Band Number Changed to 2210-57313													
1740-51720	X:OD	Salt River	Lake Shore	AHY	U	7/26/2002							X	X[1]
1740-51721	YRY:X	Salt River	Shangri-la	SY	U	7/23/2002							X	
1740-51722	YY:X	Salt River	Shangri-la	SY	M*	7/25/2002							X	X[10]
1740-51723	OKO:X	Salt River	Lake Shore	AHY	U	8/7/2002							X	
1740-51728	OW:X	Salt River	Lake Shore	AHY	F*	6/4/2002							X	
1740-51729	X:OG	Salt River	Lake Shore	AHY	U	6/14/2002							X	
1740-51730	KO:X	Salt River	North Shore 1	AHY	U	7/17/2002							X	X[1]
1740-51731	X:GR	Salt River	School House North 2	AHY	U	5/31/2002							X	X
1740-51732	DRD:X	Salt River	North Shore 1	SY	F*	6/30/2002							X	
1740-51733	OK:X	Salt River	Shangri-la	AHY	U	7/10/2002							X	
1740-51734	X:DO	Salt River	Shangri-la	AHY	U	7/10/2002							X	
1740-51736	X:WRW	Salt River	School House North 2	AHY	M*	6/11/2002							X	
1740-51737	X:KV	Salt River	School House North 2	AHY	U	6/11/2002							X	
1740-51738	YW:X	Salt River	School House North 2	AHY	M*	6/11/2002							X	

1740-51739	YKY:X	Salt River	Lake Shore	AHY	M*	6/27/2002							X	
1740-51740	Federal Bird Band Number Changed to 2290-24307													
1740-51741	X:RW	Tonto Creek	Orange Peel Flats	AHY	M*	5/23/2002							X	
1740-51742	X:YDY	Salt River	North Shore 1	SY	M*	6/3/2002							X	X[31]
1740-51743	X:DRD	Salt River	North Shore 1	AHY	M*	6/3/2002							X	
1740-51744	VYV:X	Salt River	Lake Shore	AHY	F*	6/12/2002							X	
1740-51745	DK:X	Tonto Creek	Orange Peel Flats	AHY	F*	6/16/2002							X	X[3]
1740-51746	RYR:X	Tonto Creek	Orange Peel Flats	AHY	F*	6/16/2002							X	
1740-51747	X:GWG	Salt River	Lake Shore	AHY	M*	5/27/2002							X	
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1740-51748	X:KG	Tonto Creek	Orange Peel Camp	AHY	U	6/30/2002							X	X[8]
1740-51749	VK:X	Salt River	North Shore 1	SY	M*	7/9/2002							X	
1740-51750	KRK:X	Salt River	North Shore 1	AHY	F*	7/11/2002							X	X
1740-51751	X:YV	Salt River	North Shore 2	SY	F*	7/14/2002							X	
1740-51752	X:WKW	Salt River	North Shore 2	SY	U	7/14/2002							X	
1740-51753	X:RZ	Salt River	North Shore 2	AHY	F*	6/28/2002							X	X[10]
1740-51754	X:YKY	Salt River	Shangri-la	AHY	F*	7/16/2002							X	X[10]
1740-51755	KZ:X	Salt River	North Shore 2	AHY	M*	7/14/2002							X	
1740-51756	X:WG	Salt River	North Shore 2	AHY	M*	7/14/2002							X	X[10]
1740-51757	VW:X	Salt River	School House North 1	AHY	F*	6/11/2002							X	
1740-51758	DWD:X	Salt River	School House North 1	AHY	F*	6/11/2002							X	X[3]
1740-51759	X:KD	Tonto Creek	Orange Peel Camp	AHY	M*	6/12/2002							X	
1740-51760	DO:X	Salt River	North Shore 2	AHY	U	6/27/2002							X	
1740-51761	YY:X	Tonto Creek	Orange Peel Flats	AHY	U	5/18/2002							X	X[11]
1740-51768	GW:X	Tonto Creek	Orange Peel Camp	AHY	M*	6/18/2002							X	
1740-51773	X:KR	Salt River	North Shore 1	AHY	M*	6/13/2002							X	
1740-51774	X:OZ	Tonto Creek	Orange Peel Camp	AHY	F*	6/18/2002							X	X[1]
1740-51775	X:VY	Salt River	School House North 2	AHY	F*	6/26/2002							X	
1740-51776	X:KGK	Salt River	Lake Shore	AHY	U	8/6/2002							X	
1740-51777	X:VG	Salt River	Shangri-la	AHY	U	6/3/2002							X	
1740-51778	YD:X	Salt River	School House South 3	AHY	U	6/5/2002							X	X[10]
1740-51779	X:DYD	Salt River	North Shore 1	AHY	F*	6/16/2002							X	X[11]
1740-51780	YVY:X	Salt River	North Shore 2	AHY	F*	6/30/2002							X	
1740-51781	X:YR	Salt River	North Shore 1	AHY	F*	7/15/2002							X	X
1740-51782	X:DW	Tonto Creek	Orange Peel Camp	AHY	U	5/21/2002							X	
1740-51783	X:OO	Salt River	School House North 2	AHY	U	5/22/2002							X	
1740-51784	GR:X	Salt River	Lake Shore	AHY	U	5/23/2002							X	
1740-51785	X:WK	Salt River	Lake Shore	AHY	U	5/29/2002							X	X[10]
1740-51786	X:WDW	Salt River	North Shore 1	AHY	F*	6/4/2002							X	
1740-51787	OD:X	Salt River	North Shore 2	SY	U	7/15/2002							X	
1740-51791	GRG:X	Salt River	North Shore 2	AHY	U	6/16/2002							X	X[10]
1740-51792	RO:X	Salt River	Old Salt	SY	U	6/19/2002							X	X[15]
1740-51793	X:WVW	Salt River	North Shore 1	SY	F*	6/28/2002							X	X[12]
1740-51794	X:ZG	Salt River	North Shore 1	AHY	F*	7/14/2002							X	
1740-51796	X:KW	Salt River	School House North 2	AHY	U	5/22/2002							X	X
1740-51797	X:OK	Salt River	School House North 1	AHY	U	5/29/2002							X	X[4]
1740-51798	X:WD	Salt River	Mudflats	AHY	U	6/11/2002							X	
1740-51799	Federal Bird band Number Changed to 2290-24309													
1740-51800	X:GRG	Salt River	North Shore 2	AHY	U	6/28/2002							X	
1740-51802	X:DWD	Salt River	North Shore 1	AHY	U	6/26/2002							X	
1740-51804	ZKZ:X	Salt River	North Shore 1	SY	F*	7/27/2002							X	X
1740-51805	GKG:X	Salt River	North Shore 1	AHY	F*	7/27/2002							X	X
1740-51818	X:YK	Salt River	Shangri-la	AHY	U	5/18/2002							X	X
1740-51819	Federal Bird band Number Changed to 2290-24301													

1740-51820	WZ:X	Salt River	School House North 2	AHY	U	6/19/2002							X	X[11]
1740-51821	RWR:X	Salt River	Lake Shore	SY	M*	6/26/2002							X	
1740-51830	X:VWV	Tonto Creek	Orange Peel Flats	AHY	U	5/18/2002							X	
1740-51831	X:RGR	Tonto Creek	Orange Peel Camp	AHY	U	5/23/2002							X	
1740-51832	X:ZO	Salt River	School House North 1	SY	U	6/12/2002							X	
1740-51833	X:GKG	Salt River	Old Salt	AHY	U	6/16/2002							X	
1740-51834	Federal Bird band Number Changed to 2290-24271													
1740-51837	Z:	Tonto Creek	Orange Peel Camp	N	U	7/2/2001						X		
1740-51838	Z:	Tonto Creek	Orange Peel Camp	N	U	7/2/2001						X		
1740-51839	Z:	Tonto Creek	Orange Peel Camp	N	U	7/2/2001						X		
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1740-51840	KG:K	Salt River	Shangri-la	N	U	7/25/2001						X	X[9]	
1740-51841	:K	Salt River	North Shore	N	U	7/26/2001						X		
1740-51842	K:	Salt River	North Shore	N	U	7/26/2001						X		
1740-51843	:K	Salt River	North Shore	N	U	7/26/2001						X		
1740-51850	:K	Salt River	Shangri-la	N	F	7/1/2000					X			
1740-51851	:K	Salt River	Mudflats	N	M	7/6/2000					X			
1740-51852	:K	Salt River	Mudflats	N	F	7/6/2000					X			
1740-51853	K:VWV	Salt River	Shangri-la	N	M	7/6/2000					X	X [10]		
1740-51854	K:	Salt River	Shangri-la	N	F	7/6/2000					X			
1740-51855	:K	Salt River	Shangri-la	N	F	7/6/2000					X			
1740-51856	:K	Salt River	Shangri-la	N	M	7/6/2000					X			
1740-51857	RY:K	Salt River	Shangri-la	N	F	7/6/2000					X	X [7]		X[10]
1740-51858	OK:K	Salt River	Shangri-la	N	F	7/9/2000					X	X [1]		
1740-51859	:K	Salt River	Shangri-la	N	M	7/9/2000					X			
1740-51861	:K	Salt River	Shangri-la	N	F	7/9/2000					X			
1740-51862	:K	Salt River	Shangri-la	N	F	7/9/2000					X			
1740-51863	K:YO	Salt River	Salt River Inflow	N	F	7/9/2000					X	X [10]		
1740-51865	:K	Salt River	Mudflats	N	U	6/30/2001						X		
1740-51866	:K	Salt River	Shangri-la	N	U	6/30/2001						X		
1740-51867	:K	Salt River	Shangri-la	N	U	6/30/2001						X		
1740-51868	:K	Salt River	Shangri-la	N	U	6/30/2001						X		
1740-51869	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51870	DYD:K	Salt River	Lake Shore	N	M*	7/17/2001						X		X[10]
1740-51871	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51872	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51873	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51874	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51875	:K	Salt River	Lake Shore	N	U	7/17/2001						X		
1740-51876	:K	Salt River	Shangri-la	N	F	7/3/2000					X			
1740-51877	:K	Salt River	Shangri-la	N	F	7/3/2000					X			
1740-51878	:K	Salt River	Shangri-la	N	M	7/18/2000					X			
1740-51879	:K	Salt River	Shangri-la	N	F	7/18/2000					X			
1740-51880	K:	Salt River	Lake Shore	N	U	6/29/2001						X		
1740-51881	:K	Salt River	Shangri-la	N	U	6/29/2001						X		
1740-51882	:K	Salt River	Shangri-la	N	U	6/29/2001						X		
1740-51883	:K	Salt River	Shangri-la	N	U	7/2/2001						X		
1740-51884	K:	Salt River	Shangri-la	N	U	7/2/2001						X		
1740-51885	:K	Salt River	Shangri-la	N	U	7/2/2001						X		
1740-51886	:K	Salt River	Lake Shore	N	U	7/2/2001						X		
1740-51887	K:	Salt River	Lake Shore	N	U	7/2/2001						X		
1740-51888	:K	Salt River	Lake Shore	N	U	7/2/2001						X		
1740-51889	VWV:K	Salt River	Shangri-la	SY	U	7/3/2001						X	X	X
1740-51890	:K	Tonto Creek	Orange Peel Flats	N	U	7/10/2001						X		

1740-51891	K:	Tonto Creek	Orange Peel Flats	N	U	7/10/2001						X		
1740-51892	:K	Tonto Creek	Orange Peel Flats	N	U	7/10/2001						X		
1740-51893	KD:K	Tonto Creek	Orange Peel Camp	N	F*	7/10/2001						X		X[31]
1740-51894	K:KRK	Tonto Creek	Orange Peel Camp	N	U	7/10/2001						X	X[12]	X
1740-51895	K:	Tonto Creek	Orange Peel Camp	N	U	7/10/2001						X		
1740-51896	K:	Salt River	Shangri-la	N	U	7/25/2001						X		
1740-51897	K:	Salt River	Shangri-la	N	U	7/25/2001						X		
1740-51899	K:ZKZ	Tonto Creek	Orange Peel Camp	N	U	7/27/2001						X	X[3]	
1740-51900	K:RDR	Salt River	Shangri-la	AHY	U	7/25/2001						X		
1740-91506	RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/2/1996	X		X	X	X		X[6]	X[10]
1740-91507	K/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	F	6/2/1996	X	X						

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected							
							1996	1997	1998	1999	2000	2001	2002	2003
1740-91523	X:R/R	Tonto Creek	Tonto Creek Inflow	AHY	U	6/12/1996	X	X	X	X	X			
1740-91524	RW/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/14/1996	X							
1740-91532	RK:X	Verde River	Camp Verde	N	M	7/6/1996	X			X [2]	X [1]	X [7]		
1740-91539	R:X	Tonto Creek	Tonto Creek Inflow	N	F	8/9/1996	X							
1740-91540	R:X	Tonto Creek	Tonto Creek Inflow	N	M	8/9/1996	X	X [1]						
1740-91541	R:X	Tonto Creek	Tonto Creek Inflow	N	M	8/9/1996	X							
1740-91590	WDW:K	Salt River	Shangri-la	AHY	M	7/12/2000					X		X	
1740-91591	VW:K	Salt River	Salt River Inflow	SY	M	7/12/2000					X	X [3]	X	X
1740-91592	K:WV	Tonto Creek	Tonto Creek Inflow	AHY	F	7/13/2000					X			
1740-91593	K:	Tonto Creek	Tonto Creek Inflow	N	M	7/14/2000					X			
1740-91594	K:	Tonto Creek	Tonto Creek Inflow	N	M	7/14/2000					X			
1740-91595	K:	Tonto Creek	Tonto Creek Inflow	N	M	7/14/2000					X			
1740-91596	OD:K	Salt River	Shangri-la	N	M	7/19/2000					X	X		X[1]
1740-91597	:K	Salt River	Shangri-la	N	M	7/21/2000					X			
1740-91598	:K	Salt River	Shangri-la	N	F	7/21/2000					X			
1740-91599	:K	Salt River	Shangri-la	N	M	7/21/2000					X			
1740-91600	K:DW	Salt River	Shangri-la	AHY	M	6/15/2000					X			
1740-91632	KW:X	White Mountains	Alpine Horse Pasture	N	M	7/11/1996	X		X [17]			X [3]		
1740-91701	R/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/1/1996	X							
1740-91702	X:G/R	Tonto Creek	Tonto Creek Inflow	AHY	M	6/1/1996	X	X						
1740-91703	L/R:X	Tonto Creek	Tonto Creek Inflow	AHY	F	6/1/1996	X							
1740-91704	K/R:X	Tonto Creek	Tonto Creek Inflow	AHY	F	6/1/1996	X	X						
1740-91705	X:D/R	Tonto Creek	Tonto Creek Inflow	AHY	F	6/2/1996	X							
1740-91706	KY:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/3/1996	X	X	X	X	X	X	X	X
1740-91707	W/R:X	Salt River	Salt River Inflow	AHY	M	6/4/1996	X							
1740-91708	X:R/DP	Salt River	Salt River Inflow	AHY	M	6/4/1996	X							
1740-91709	X:G/R	Salt River	Salt River Inflow	AHY	F	6/4/1996	X	X						
1740-91710	X:L/R	Salt River	Salt River Inflow	AHY	F	6/4/1996	X		X [2]					
1740-91711	X:K/R	Salt River	Salt River Inflow	AHY	F	6/5/1996	X							
1740-91712	X:Y/R	Salt River	Salt River Inflow	AHY	F	6/5/1996	X	X [2]						
1740-91713	X:W/R	Salt River	Salt River Inflow	AHY	M	6/5/1996	X	X [2]	X					
1740-91714	PD/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/11/1996	X		X	X		X[1]	X	
1740-91715	KW/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/11/1996	X							
1740-91716	D/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/12/1996	X							
1740-91717	G/WR:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/12/1996	X	X	X [16]					
1740-91718	O/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	6/13/1996	X							
1740-91719	L/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	F	6/14/1996	X							
1740-91720	X:O/R	Salt River	Salt River Inflow	AHY	F	6/15/1996	X	X						
1740-91721	X:WV	Salt River	Salt River Inflow	AHY	M	6/15/1996	X		X [2]	X	X	X		
1740-91722	X:L/RW	Salt River	Salt River Inflow	AHY	M	6/16/1996	X							
1740-91723	X:K/WR	Salt River	Salt River Inflow	AHY	F	6/16/1996	X	X						
1740-91724	X:D/RW	Salt River	Salt River Inflow	AHY	M	6/17/1996	X							

1740-91725	X:Y/RW	Salt River	Salt River Inflow	AHY	M	6/18/1996	X	X						
1740-91726	X:O/RW	Salt River	Salt River Inflow	AHY	F	6/18/1996	X							
1740-91727	X:KW/R	Salt River	Salt River Inflow	AHY	M	6/19/1996	X							
1740-91728	X:RG	Salt River	Salt River Inflow	AHY	M	6/27/1996	X	X	X	X [5]	X [3]	X		
1740-91729	X:Y/DP	Salt River	Salt River Inflow	AHY	M	6/28/1996	X	X [2]						
1740-91730	X:W/DP	Salt River	Salt River Inflow	AHY	F	6/29/1996	X							
1740-91731	X:O/DP	Salt River	Salt River Inflow	AHY	F	6/29/1996	X							
1740-91732	X:RW/DP	Salt River	Salt River Inflow	AHY	M	6/29/1996	X							
1740-91733	X:KW/DP	Salt River	Salt River Inflow	AHY	M	6/29/1996	X							
1740-91734	X:K/DP	Salt River	Salt River Inflow	AHY	M	6/29/1996	X							
1740-91739	X:WY	Salt River	Salt River Inflow	AHY	M	6/19/1996	X	X	X	X [3]	X			
1740-91740	X:KW/RW	Salt River	Salt River Inflow	AHY	F	6/19/1996	X							
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
1740-91741	D:WR:X	Tonto Creek	Tonto Creek Inflow	AHY	F	7/12/1996	X	X						
1740-91742	Y/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	7/12/1996	X	X						
1740-91743	R:X	Tonto Creek	Tonto Creek Inflow	N	F	7/13/1996	X							
1740-91744	PD/RW:X	Tonto Creek	Tonto Creek Inflow	AHY	M	7/13/1996	X	X	X	X	X			
1740-91745	R/DP:X	Salt River	Salt River Inflow	AHY	M	7/14/1996	X							
1740-91760	X:G/PD	Salt River	Salt River Inflow	AHY	F	7/15/1996	X	X						
1740-91857	D:RG	San Pedro River	Kearny Sewage Ponds	N	F	6/22/1998			X	X [15]	X [14]	X [3]		
1740-91966	K:KD	Salt River	Shangri-la	AHY	M	6/15/2000					X	X [1]	X	X
1740-91967	K:GK	Salt River	Mudflats	AHY	F	6/16/2000					X	X [7]	X[8]	X
1740-91968	WD:K	Salt River	Shangri-la	AHY	F	6/17/2000					X	X	X	
1740-91969	DW:K	Salt River	Old Salt	AHY	F	6/18/2000					X	X		X[1]
1740-91970	K:KOK	Salt River	School House North 1	AHY	M	6/19/2000					X	X	X	X[10]
1740-91972	YD:K	Salt River	School House North 1	AHY	F	6/19/2000					X	X [3]		
1740-91973	WW:K	Salt River	School House North 1	AHY	M	6/19/2000					X	X [1]	X [3]	X
1740-91974	GK:K	Salt River	School House North 1	AHY	F	6/19/2000					X	X	X	X
1740-91975	K:OY	Salt River	Shangri-la	AHY	M*	7/1/2000					X	X[7]	X[9]	X
1740-91976	KO:K	Salt River	Lake Shore	N	U	7/17/2001						X	X[19]	
1870-58350	Y/R:X	Tonto Creek	Tonto Creek Inflow	AHY	M	7/12/1995	X							
2070-92904	X:WU/R	Salt River	Salt River Inflow	AHY	F	7/1/1997		X						
2070-92905	WK/R:X	Salt River	Salt River Inflow	AHY	M	7/23/1997		X	X [2]	X	X [3]	X	X	
2070-92954	R/X:R	Salt River	Salt River Inflow	AHY	M	7/14/1997		X						
2140-66693	RR:WVW	L. Colorado River	Lake Mead	N	U	8/2/2001						X	X [9]	
2210-57001	K:	Salt River	Shangri-la	N	F	7/21/2000					X			
2210-57002	K:OK	Salt River	Shangri-la	N	M	7/21/2000					X	X [9]	X[10]	X
2210-57003	:K	Salt River	Shangri-la	N	F	7/21/2000					X			
2210-57006	:K	Salt River	Mudflats	N	M	7/27/2000					X			
2210-57007	WO:K	Salt River	Shangri-la	N	F	7/27/2000					X	X [9]		
2210-57008	K:YR	Salt River	Shangri-la	N	F	7/29/2000					X	X [9]		
2210-57009	:K	Salt River	Shangri-la	N	F	7/30/2000					X			
2210-57010	WGW:K	Salt River	Shangri-la	N	F	7/30/2000					X		X[8]	
2210-57011	:K	Salt River	Shangri-la	N	F	7/30/2000					X			
2210-57012	:K	Salt River	Shangri-la	N	M	7/30/2000					X			
2210-57013	:K	Salt River	Shangri-la	N	M	7/30/2000					X			
2210-57014	K:DD	Salt River	Shangri-la	N	F	7/31/2000					X	X [9]	X	X[10]
2210-57015	K:	Salt River	Shangri-la	N	M	7/31/2000					X			
2210-57031	K:OW	Salt River	Lake Shore	SY	M	7/16/2000					X			
2210-57032	DRD:K	Salt River	Shangri-la	N	U	7/1/2001						X	X[10]	X[8]
2210-57033	K:OR	Salt River	Shangri-la	N	U	7/1/2001						X	X[7]	
2210-57034	OKO:K	Salt River	Shangri-la	N	F*	7/1/2001						X		X[10]
2210-57035	:K	Salt River	Shangri-la	N	U	7/1/2001						X		
2210-57037	:K	Salt River	Shangri-la	N	U	7/1/2001						X		

2210-57038	K:	Salt River	Shangri-la	N	U	7/10/2001						X		
2210-57039	:K	Salt River	Shangri-la	N	U	7/10/2001						X		
2210-57040	K:	Salt River	Shangri-la	N	U	7/10/2001						X		
2210-57041	K:WDW	Salt River	Shangri-la	AHY	M*	7/29/2001						X	X	X
2210-57044	:K	Salt River	Shangri-la	N	U	6/28/2001						X		
2210-57045	:K	Salt River	Shangri-la	N	U	6/28/2001						X		
2210-57046	:K	Salt River	Shangri-la	N	U	6/28/2001						X		
2210-57047	:K	Salt River	Lake Shore	N	U	7/4/2001						X		
2210-57048	:K	Salt River	Lake Shore	N	U	7/10/2001						X		
2210-57049	K:	Salt River	Lake Shore	N	U	7/10/2001						X		
2210-57051	K:	Salt River	Shangri-la	N	U	7/12/2001						X		
2210-57052	DK:K	Salt River	Shangri-la	N	U	7/12/2001						X		X[8]
2210-57053	K:KYK	Salt River	Shangri-la	N	U	7/12/2001						X		X[10]
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
2210-57054	:K	Salt River	Shangri-la	N	U	7/12/2001						X		
2210-57055	K:	Salt River	Shangri-la	N	U	7/25/2001						X		
2210-57056	K:	Salt River	Shangri-la	N	U	7/25/2001						X		
2210-57057	K:	Salt River	Shangri-la	N	U	7/25/2001						X		
2210-57058	K:	Salt River	Shangri-la	N	U	7/27/2001						X		
2210-57059	KV:K	Salt River	Shangri-la	N	U	7/27/2001						X		X[9]
2210-57060	:K	Tonto Creek	Tonto Creek Inflow	N	F	7/15/2000					X			
2210-57061	K:	Salt River	Shangri-la	N	F	7/17/2000					X			
2210-57062	K:OD	Salt River	Shangri-la	N	F	7/17/2000					X	X [9]		
2210-57063	K:	Salt River	Shangri-la	N	F	7/17/2000					X			
2210-57064	:K	Salt River	Salt River Inflow	N	F	7/17/2000					X			
2210-57065	:K	Salt River	Salt River Inflow	N	M	7/17/2000					X			
2210-57066	K:	Salt River	Salt River Inflow	N	M	7/17/2000					X			
2210-57067	K:	Salt River	Salt River Inflow	N	F	7/17/2000					X			
2210-57068	:K	Salt River	Shangri-la	N	F	7/18/2000					X			
2210-57069	VK:K	Salt River	Shangri-la	N	M	7/11/2000					X	X [7]	X [9]	
2210-57070	RD:K	Salt River	Shangri-la	N	F	7/11/2000					X	X [8]		
2210-57071	RG:K	Tonto Creek	Orange Peel Flats	AHY	M	7/12/2000					X	X [2]	X	X
2210-57072	:K	Tonto Creek	Tonto Creek Inflow	N	F	7/15/2000					X			
2210-57073	:K	Tonto Creek	Tonto Creek Inflow	N	M	7/15/2000					X			
2210-57074	:K	Salt River	Shangri-la	N	F	7/15/2000					X			
2210-57075	OG:K	Salt River	Shangri-la	N	F	7/15/2000					X	X [9]		X[10]
2210-57076	K:OO	Salt River	Salt River Inflow	N	F	7/19/2000					X	X [3]		
2210-57077	K:	Salt River	Salt River Inflow	N	M	7/19/2000					X			
2210-57078	RWR:K	Salt River	Lake Shore	AHY	M*	6/18/2001						X		
2210-57079	K:	Salt River	Lake Shore	N	U	6/26/2001						X		
2210-57080	K:	Salt River	Lake Shore	N	U	6/26/2001						X		
2210-57081	K:	Salt River	Lake Shore	N	U	6/26/2001						X		
2210-57092	:K	Salt River	Shangri-la	N	U	6/27/2001						X		
2210-57093	DY:K	Salt River	Shangri-la	N	U	6/27/2001						X	X[9]	X[10]
2210-57094	K:	Salt River	Mudflats	N	U	6/27/2001						X		
2210-57095	K:YKY	Salt River	Mudflats	N	U	6/27/2001						X	X[10]	
2210-57096	:K	Salt River	School House South 3	N	U	6/27/2001						X		
2210-57097	:K	Salt River	Lake Shore	N	U	6/29/2001						X		
2210-57098	:K	Salt River	Lake Shore	N	U	6/29/2001						X		
2210-57099	K:	Salt River	Lake Shore	N	U	6/29/2001						X		
2210-57301	X:KWK	Salt River	Lake Shore	AHY	F*	7/15/2002							X	X[10]
2210-57302	X:WGW	Salt River	Lake Shore	AHY	U	7/15/2002							X	
2210-57303	ZK:X	Salt River	Lake Shore	AHY	U	7/21/2002							X	
2210-57304	X:YRY	Salt River	Lake Shore	AHY	M*	7/21/2002							X	X[10]

2210-57305	X:ZKZ	Salt River	Lake Shore	AHY	M*	7/22/2002							X	X[19]
2210-57306	KGK:X	Salt River	Lake Shore	AHY	M*	7/22/2002							X	X[8]
2210-57307	D:OKO	Salt River	Lake Shore	AHY	M*	6/14/2001						X	X[11]	X[10]
2210-57308	UNB:X	Salt River	Lake Shore	SY	U	7/16/2002							X	X[12]
2210-57309	VWV:X	Salt River	Lake Shore	SY	U	7/29/2002							X	X[7]
2210-57313	DYD:D	Salt River	Lake Shore	AHY	U	7/16/2002							X	X[6]
2210-57319	X:ZRZ	Salt River	Lake Shore	SY	U	7/29/2002							X	X[12]
2210-57322	X:OKO	Salt River	Lake Shore	SY	U	7/27/2002							X	
2210-57323	G:WG	Salt River	North Shore 1	AHY	M*	5/17/2003								X
2210-57324	WG:X	Salt River	North Shore 1	SY	F*	7/17/2002							X	
2210-57325	X:OR	Salt River	North Shore 1	SY	U	7/17/2002							X	
2210-57326	X:ZO	Salt River	North Shore 1	SY	U	7/17/2002							X	X[9]
2210-57327	RY:X	Salt River	North Shore 1	AHY	F*	7/29/2002							X	
2280-96652	G:YKY	Salt River	School House North 2	AHY	F*	6/26/2003								X

USFWS Band Number	Color Band Combo	Site	Patch Banded	Age When Banded	Sex	Date Banded	Years Detected							
							1996	1997	1998	1999	2000	2001	2002	2003
2280-96653	G:WVW	Salt River	Shangri-la	SY	F*	7/25/2003								X
2280-96761	ZO:X	Salt River	Lake Shore	AHY	M*	8/9/2002							X	X[10]
2280-96838	WKW:X	Salt River	Lake Shore	SY	U	8/8/2002							X	
2290-24201	G:VG	Tonto Creek	Bar X Road	AHY	F*	6/3/2003								X
2290-24202	G:KY	Salt River	Shangri-la	N	U	6/21/2000					X	X [9]		X[6]
2290-24211	G:RWR	Salt River	School House South 3	SY	F*	5/20/2003								X
2290-24212	KOK:G	Salt River	North Shore 1	SY	F*	5/29/2003								X
2290-24213	G:GRG	Salt River	Mudflats	SY	F*	6/1/2003								X
2290-24214	DO:G	Salt River	North Shore 1	SY	M*	6/13/2003								X
2290-24215	OO:G	Salt River	North Shore 1	AHY	F*	6/30/2003								X
2290-24216	G:VK	Salt River	North Shore 1	AHY	F*	7/15/2003								X
2290-24221	G:OO	Salt River	Lake Shore	AHY	M*	5/6/2003								X
2290-24222	DK:G	Salt River	North Shore 1	SY	U	5/26/2003								X
2290-24223	WW:G	Salt River	School House South 3	AHY	F*	5/30/2003								X
2290-24224	G:VWV	Salt River	North Shore 1	AHY	U	7/9/2003								X
2290-24225	KD:G	Salt River	Lake Shore	AHY	F*	7/11/2003								X
2290-24226	KWK:G	Salt River	North Shore 1	AHY	M*	7/23/2003								X
2290-24231	G:KW	Salt River	North Shore 1	AHY	F*	6/10/2003								X
2290-24232	YW:G	Salt River	North Shore 1	AHY	F*	6/11/2003								X
2290-24233	RD:G	Salt River	North Shore 1	SY	F*	6/11/2003								X
2290-24234	G:RY	Salt River	Shangri-la	AHY	M*	6/12/2003								X
2290-24235	GWG:G	Salt River	Shangri-la	AHY	F*	6/12/2003								X
2290-24236	G:DYD	Salt River	Shangri-la	AHY	F*	6/15/2003								X
2290-24237	KW:G	Salt River	Salt River Inflow	AHY	F*	6/16/2003								X
2290-24238	DY:G	Salt River	North Shore 1	AHY	F*	6/25/2003								X
2290-24239	G:RGR	Salt River	North Shore 1	SY	M*	6/25/2003								X
2290-24240	G:DR	Salt River	School House North 2	AHY	F*	6/26/2003								X
2290-24241	DR:G	Salt River	School House South 3	SY	F*	6/4/2003								X
2290-24242	DW:G	Salt River	Shangri-la	SY	F*	6/27/2003								X
2290-24251	G:DW	Salt River	Shangri-la	AHY	F*	5/31/2003								X
2290-24252	KYK:G	Salt River	Shangri-la	AHY	F*	6/1/2003								X
2290-24253	KY:G	Salt River	North Shore 2	AHY	F*	6/11/2003								X
2290-24254	G:VYV	Salt River	Lake Shore	AHY	U	6/12/2003								X
2290-24255	KY:G	Salt River	Shangri-la	AHY	U	7/22/2003								X
2290-24256	GK:G	Salt River	Shangri-la	SY	U	7/22/2003								X
2290-24257	G:OW	Verde River	Camp Verde	AHY	F*	6/5/1997		X	X [14]	X	X [3]			X
2290-24261	G:KG	Salt River	North Shore 2	AHY	M*	6/15/2003								X
2290-24262	G:RD	Salt River	Old Salt	AHY	M*	6/25/2003								X
2290-24267	G:DRD	Salt River	School House North 2	AHY	U	5/15/2003								X

2290-24270	G:OKO	Salt River	School House North 2	AHY	M*	5/28/2003								X
2290-24271	G:RR	Salt River	North Shore 1	SY	M*	7/2/2002							X	X[11]
2290-24272	G:KR	Salt River	North Shore 1	AHY	F*	6/2/2003								X
2290-24279	G:RW	Salt River	Shangri-la	AHY	U	5/30/2003								X
2290-24280	G:KV	Salt River	Salt River Inflow	AHY	F*	6/1/2003								X
2290-24281	G:DWD	Salt River	School House South 3	AHY	F*	6/2/2003								X
2290-24282	G:RDR	Salt River	School House South 3	AHY	F*	6/3/2003								X[7/6]
2290-24283	G:YK	Salt River	North Shore 1	AHY	U	7/27/2003								X
2290-24285	G:WDW	Salt River	School House North 2	AHY	F*	6/13/2003								X
2290-24287	G:KD	Salt River	North Shore 1	AHY	M*	6/27/2003								X
2290-24288	G:KRK	Salt River	North Shore 1	AHY	F*	7/15/2003								X
2290-24291	RKR:G	Tonto Creek	Orange Peel Camp	AHY	F*	6/24/2003								X
2290-24293	DWD:G	Tonto Creek	Orange Peel Camp	AHY	F*	6/27/2003								X
2290-24301	D:WZW	Salt River	School House South 3	AHY	U	6/2/2002							X	X
2290-24302	D:WRW	Salt River	School House South 3	AHY	M	6/19/2000					X	X	X	X[10]
USFWS Band Number	**Color Band Combo**	**Site**	**Patch Banded**	**Age When Banded**	**Sex**	**Date Banded**	**Years Detected**							
							1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
2290-24303	YKY:D	Salt River	North Shore 1	AHY	M*	5/28/2003								X
2290-24304	KGK:D	Salt River	Shangri-la	N	U	6/25/2001						X	X[9]	X[6]
2290-24305	KWK:D	Salt River	School House South 3	AHY	M*	5/31/2003								X
2290-24306	RGR:D	Salt River	Shangri-la	N	M	7/7/1999				X	X[9]	X	X	X
2290-24307	D:WGW	Salt River	Lake Shore	AHY	M*	5/18/2002							X	X
2290-24308	D:KOK	Tonto Creek	Orange Peel Camp	AHY	U	5/9/2001						X	X	X
2290-24309	D:VWV	Salt River	Mudflats	SY	U	6/11/2002							X	X[9]
2290-24310	VYV:D	Salt River	Shangri-la	AHY	U	6/1/2001						X	X[10]	X[30]
2290-24311	D:YDY	Salt River	North Shore 1	AHY	M*	6/25/2003								X
2290-24312	RKR:D	Salt River	Shangri-la	N	F	7/1/2000					X		X[8]	X[10]
2290-24313	D:YKY	Salt River	North Shore 1	AHY	M*	6/25/2003								X
2290-24314	D:DWD	Salt River	Shangri-la	AHY	M	6/6/2000					X	X[7]	X	X

Site codes (for movement): **1**=Old Salt, **2**=Tonto, **3**=Shangri-la, **4**=Mudflats, **5**=School House South 1, **6**=School House South 3, **7**=School House North 1, **8**=School House North 2, **9**=Lake Shore, **10**=North Shore 1, **11**=Orange Peel Campground, **12**=Orange Peel Flats, **13**=A-Cross Road, **14**=Kearny Sewage Ponds (San Pedro River), **15**=Indian Hills (San Pedro River), **16**=Gila River South 07 (GS07), **17**=Greer Township (White Mtns.), **18**=Gila River **19**= North Shore 2, **20 =** Lower Colorado River, **21** = Gila River North 04, **30** = Bar X, **31** = Verde River